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**Factors affecting participation in group agri-
environment schemes: a case study of the Dartmoor
Commons**

By

Ann Willcocks

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Abstract

Ann Willcocks

FACTORS AFFECTING PARTICIPATION IN GROUP AGRI-ENVIRONMENT SCHEMES: A CASE STUDY OF THE DARTMOOR COMMONS

Environmental stewardship schemes are an important driver of biodiversity and habitat improvement throughout England, with the provision of funding to land managers to deliver effective land management that will benefit wildlife, habitats, natural resources and the population. Participation in agri-environment schemes is voluntary and much is done to encourage scheme participation.

Dartmoor is a designated landscape, a National Park, and a Special Area of Conservation and encompasses areas of Sites of Special Scientific Interest (SSSI). Dartmoor is a farmed landscape, with the area divided into 92 common land units, over which a diversity of common rights are exercised.

At present, the majority of Dartmoor Commons are managed by Environmental agreements, protecting the habitat and the SSSI's. There is a demand for Dartmoor to be a recreational area, an environmental jewel, and a farmed landscape. Protection of this landscape requires the amalgamation of various organisations and individuals. Research indicates the benefits of group agri-environment schemes, of a landscape-scale approach to the improvement of habitats and the provision of wildlife corridors, crossing the boundaries of land ownership.

The research considers the factors associated with group agri-environment schemes, where it is not necessarily like-minded individuals who come together because of a common cause and a shared vision. The issue surrounding common rights results in persons coming together because they have common rights and not necessarily a common view.

A combination of interview responses and questionnaire data has been pulled together to ascertain the factors affecting agri-environment scheme participation on Dartmoor. The data reflects on the impacts of group agri-environment schemes on the commons of Dartmoor.

The question remains as to the voluntary nature of group agri-environment schemes on Dartmoor. Hardin (1968) recognised the impact of one commoner's decision had on another. Dartmoor agri-environment schemes require participation from the majority of commoners; therefore an individual's action has a consequence. This research aims to investigate the impacts of agri-environment schemes on the commons of Dartmoor.

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During the period of the research project there have been various governmental changes that may well impact on the future of the information supplied here.

The principal change is the decision for the UK to leave the EU.

Author's declaration

At no time during the registration for the degree of Research Masters has the author been registered for any other University award without prior agreement of the Graduate Committee.

Work submitted for this research degree at the Plymouth University has not formed part of any other degree either at Plymouth University or at another establishment.

This study was carried out in collaboration with Duchy College.

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List of abbreviations

AES	Agri-Environment Schemes
BPS	Basic Payment Scheme
CAP	Common Agricultural Policy
CSF	Catchment Sensitive Farming
DCC	Dartmoor Commoners Council
DHFP	Dartmoor Hill Farm Project
ELS	Environmental Stewardship Scheme
ESA	Environmentally Sensitive Area
EU	European Union
HFA	Hill Farm Allowance
HLCA	Hill Land Compensatory Allowance
HLS	Higher Level Stewardship Scheme
HR8	Higher Level Stewardship group payment
LSU	Livestock unit
NE	Natural England
SAC	Special Area of Conservation
SPS	Single Payment Scheme
SSSI	Site of Special Scientific Interest
UELS	Uplands Entry Level Stewardship Scheme
UX1	Uplands Group Scheme payment

Chapter One

Introduction

1.1 Introduction

Environmental Stewardship schemes have been a major part of Dartmoor farming since 1998, when, as a direct result of the overgrazing by livestock of common land the first Environmentally Sensitive Area Agreements (ESA) were put in place (DNPA, 2015). Since 1998, the number of commons and the area enrolled with some form of an agri-environment scheme on Dartmoor has increased year on year. Providing on average £118/ha/year for areas entered into in Higher Level Stewardship agreements. The payments received for agri-environment schemes are a significant boost to the economy of Dartmoor considering there are approximately 35 000ha of common land on Dartmoor, with the majority enrolled in agri-environment, providing £4 million per annum to the Dartmoor economy for the provision of ecosystem services (Waldon, 2015).

Dartmoor Commons are extensive areas of rough upland grazing with rights of common spread across them for 145 000 sheep (29 000 Livestock units) 33 000 (33 000 Livestock Units) cattle and 12 330 (12 330 Livestock units) ponies totaling 74 330 Livestock units (DNPA, 2015). The actual numbers of grazed livestock on the commons are much reduced from previous decades. There are no recorded figures for grazed livestock, but on an average agri-environment scheme stocking rate of 0.12 Livestock Units (LSU) per hectare, there may be as few as 7 700 LSU as grazing livestock, the figures will vary from source to source.

All environmental stewardship agreements on Dartmoor involve groups of commoners with grazing rights over a specific of common. It is the group participation that is the primary focus of this research.

1.2 Positionality of the author

The author lives on the southern edge of Dartmoor and works in partnership with her husband. The farming partnership utilizes grazing rights on two Dartmoor Commons. Both commons are enrolled in a Higher Level Stewardship scheme (HLS) and Uplands Entry Level Stewardship scheme (ELS).

The author is known locally to many of the respondents due to her role as Secretary or Secretary and Treasurer to some of the Local Commoners' Associations across Dartmoor. More recently, the author has become a member of the Dartmoor Commoners' Council.

1.3 Aims and objectives of the research

The aims of the research project are to assess the factors affecting the participation of agri-environment agreements from a Dartmoor perspective and to consider the implications for the group schemes involving large numbers of individual participants (commoners). The research will determine if the participants had shared common objectives and if membership to the schemes had specific impacts upon the Dartmoor farming community.

1.4 The study area: Dartmoor

Dartmoor is an area of upland within the County of Devon and was designated as a National Park in 1951 as per Figure 1, encompassing 954km² of which around 35 000ha is common land split into 92 common land units (Figure 2) (DNPA, 2015).



Figure 1 Dartmoor National Park (© Dartmoor National Park Authority)

Common land is described as land over which one or more person has common rights. A common right is described, as the right one person has to take from the land of another. This may be, but not exclusively one of the following (Gadsden, 1988).

Pasture – the right to graze a certain number and type of livestock

Estovers – the rights to cut and take wood, rushes or heather

Turbary – the right to cut peat for fuel or to take sods

Soil – the right to take sand or stone

Piscary – the right to take fish from the ponds or streams.

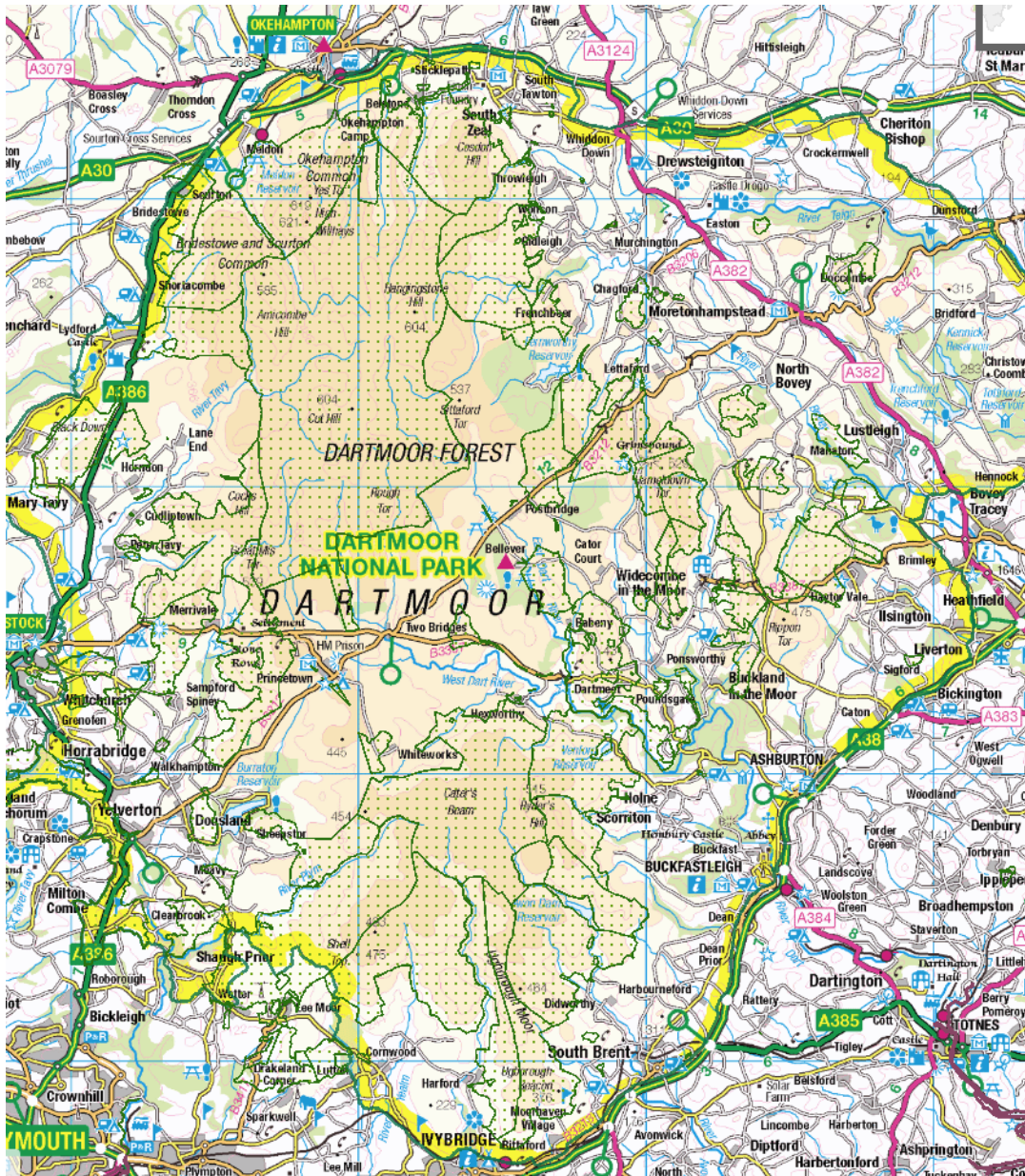


Figure 2 Map of Dartmoor with common land shown by dots

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Common land covers approximately 550 000ha of England and Wales, with 2500 registered commons in England with 3% of the total land area in England

being Common Land. Most of the common land is in the ownership of private landowners. Almost half of which is designated as SSSI, which is an important driver for habitat protection and therefore control of common rights. There was no method within SSSI designation to deal with common rights on common land.

The history of common rights is complicated; many studies have reviewed the origination and subsequent registration of common rights. There have been many legislative Acts of Parliament passed, including, but not exclusively:

- The Scott report of 1942, calling for the recording of common lands and relevant details.
- The report from the Royal Commission produced in 1955 which was the first step to the 1965 Commons Registration Act resulting in the registration of all commons and the rights attached (Parkes, 2005).

Historically, the number of rights was appurtenant to the home farm; determined by the winter carrying capacity of the home farm. However, this was not always the case as far as registration under the Registration Act 1965, with many more rights sometimes registered to a holding than would have been registered if determined by the winter carrying capacity (Gadsden, 1988).

The Introduction and subsequent passing of the Commons Registration Act 1965 was very controversial. The number of rights registered per common was, in many instances greatly exaggerated (Rodgers, 2007). There was a formal process of appeal offered to amend the registration of rights, but where there were no objectors to the applications, the rights remained unchallenged. Parkes

(2005) emphasised the point as only four farms within the Parish had rights registered over Ewyas Harold Common in 1941, yet there were 30 claims under the 1965 Commons Registration Act. The carrying capacity of the common was immaterial as far as the Commons Registration Act 1965 was concerned.

On Dartmoor, the right of common is linked to the land that forms part of the holding and the common right cannot be severed from the land. Dartmoor common rights are only transferable by a change in ownership of the land holding the common rights. In other areas across the country, the allocation and use of common rights vary Dartmoor Commons have approximately 54 separate owners, 583 registrations, on the live register with grazing rights for 145 000 sheep, 33 000 cattle and 12 330 ponies as well as numerous rights for geese and pigs. There is no requirement for the number of livestock grazed on Dartmoor to be recorded within the public domain. Dartmoor Commoners Council (DCC) suggested the actual grazing numbers may be between 1 200 and 1 500 ponies, 1 000 cattle and based upon an average stocking rate under Higher Level Stewardship of 0.12 LSU/ha, about 12 000 sheep, although the actual figures may be a lot less than this (Waldon, 2015).

The Dartmoor Commons are split into quarters, with a number of commons incorporated into a quarter (Figure 3). The definition of quarters is an historic division of Dartmoor common land, with the Forest of Dartmoor at the centre. The research area encompassed commoners from each quarter, many of who would have duplicated common rights on the Forest of Dartmoor.

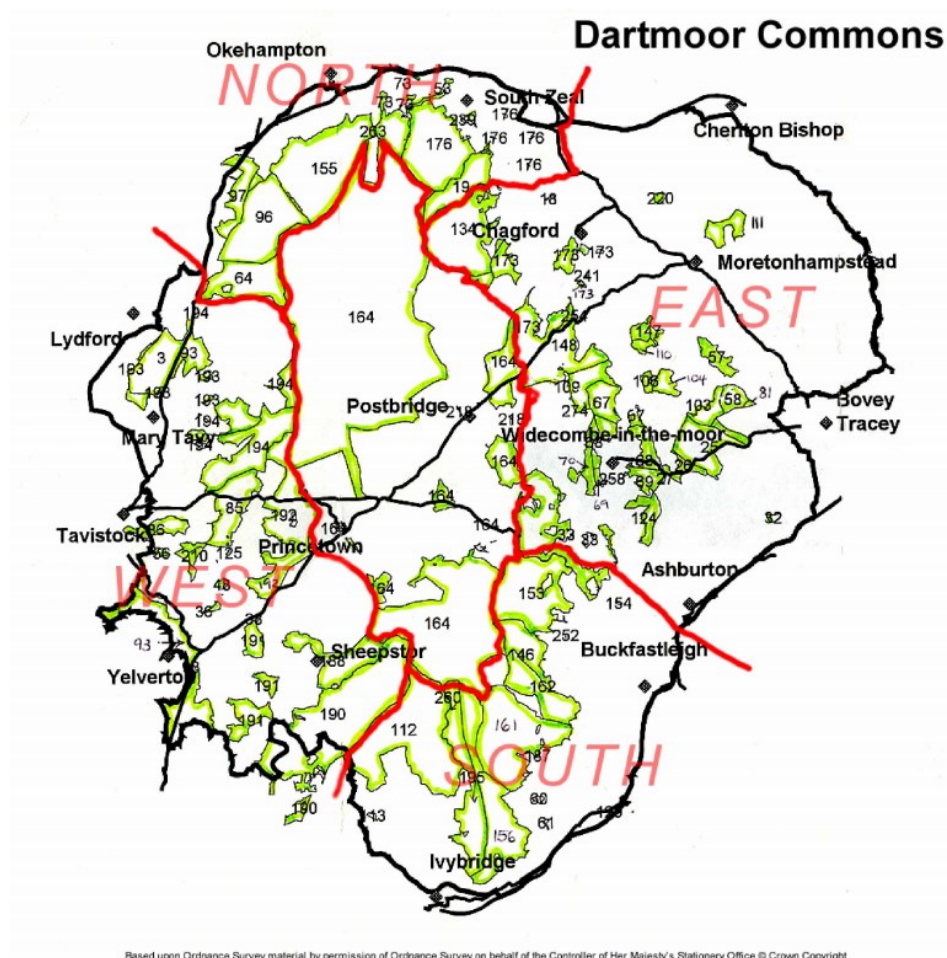


Figure 3 Map of Dartmoor displaying Quarters of the Moor (Dartmoor Commoners Council, 2016)

Dartmoor has a live register of common rights, established under the Dartmoor Commons Act 1985. The Live Register lists those persons with common rights that are still active. Many of the rights registered under the 1965 Act are no longer exercised. The land to which they are appurtenant is no longer available for agricultural use. The register of common rights is held with Devon County

Council as the recognised Commons Registration Authority, but under the Dartmoor Commons Act rights holders pay a levy to the DCC according to the number of rights they hold and the status of the right. Grazing commoners pay 30p/livestock unit and non-grazing commoners pay 5p/livestock unit.

The clarification of a grazing livestock unit and a non-grazing livestock unit is not as clear as it first appears. A grazing commoner is not necessarily a commoner who grazes livestock on the common. Hill Farm Allowance (HFA) replaced the Hill Land Compensatory Allowance (HLCA). HFA was a land based payment and the common rights of those persons who grazed or used the commons could be converted to an area allocation. It was made feasible, on Dartmoor to ensure that common rights holders would be able to claim HFA if they were grazing the common. Many non-grazing commoners were allocated a single grazed unit and their registration with the DCC changed to a grazing commoners status, thus enabling them to collect HFA without the need to graze livestock on the common (Alford, 2015). The majority of commons right holders listed with the DCC are listed as grazing commoners, because of the benefits to be had with various government aid schemes, a more accurate description would be a non-active grazing commoner. There is no formal method of differentiation of a grazing commoner and a non-active grazing commoner within the register. No other area in Great Britain with common rights was investigated.

Chapter Two

Background study

2.1. A brief history of the Common Agricultural Policy

Six nations came together to create The European Union with a shared vision for a common market. The original six countries were Belgium, France, Italy, Luxembourg, Netherlands and West Germany. From the Treaty of Rome, signed in 1957, came the Common Agricultural Policy (CAP) in 1962 with a vision of market unity, community preference, and financial solidarity. These were the first steps in supporting agriculture and food production. The food shortages of the two World Wars were still fresh in the minds of the people and the idea was to ensure food security for the European nations (European Commission, 2012). The United Kingdom had applied to join the EU in 1961 but was not successful in its application until 1973, when France, who had vetoed the requests on the two previous occasions, eventually accepted the application. Figure 4 provides a diagrammatic representation of the CAP development.

With the necessity to increase food production, The Government policy was about encouraging production; however, there was no consideration given to the consequences of overproduction and the increases in efficiency. An example of the overproduction was reflected in the increase in the national sheep flock by 40% for the period 1980 to 1998 and the subsequent increase in sheep meat production (EBLEX, 2013). Less Favoured Areas (LFA) accounted for one-third of the grazed sheep livestock units, as there is little alternative to sheep grazing on such poor ground. This is an important factor in the designation of the uplands with the future of environmental schemes. It was relatively easy to

increase sheep numbers in the uplands as the CAP paid on a per head basis for sheep. In 1993 quotas were introduced to control sheep numbers in the national flock and to limit sheep meat production. 1991 was the reference year. In 1998 70% of all of the UK's sheep were in the LFA's as well as 57% of all the Sheep Annual Premium claimants. The high number of grazing sheep in the uplands was duly noticed: areas of intense overgrazing as well as localized under-grazing were an impact upon the landscape and the environment.

In 1995 the World Trade Organisation (WTO) was created on the basis and cessation of the General Agreement on Tariffs and Trade (GATT). The aims of the WTO were simple, to ensure open borders and fair trade. The WTO has a sophisticated methodology of indicating how subsidies for production and commerce are to be supported: a coloured box system; Amber, Red, and Green. Although it is not as clear as that and there is a blue box. However the most relevant for this discussion is the Green box. All Green Box subsidies must not impact upon trade. Green Box subsidies are funded by the Government and would include payments made under pillar two of the CAP funds (World Trade Organisation, 2016). 'Green Box' rules determined that the payments for environmental schemes could only amount to foregone agricultural income (Condliffe, 2009).

The McSharry Common Agricultural Policy Reform of 1992 was the driver for a change in the direction of agricultural support within the European Union (EU). The McSharry reforms acknowledged that food production could not be at any cost and that the environment was at risk. There was a need to farm in a more

sustainable manner, using the resources for the production today, but leaving sufficient for future generations to benefit from the resource. There was a shift in the methods of support payments for farmers. A move away from price support payments of produce to direct in recognition of the income foregone for farming in such a manner that was beneficial to the environment, set high welfare standards for livestock and crops produced to high quality and safety standards (European Commission, 2012).

The CAP Agenda 2000 reiterated the importance of protecting the environment and the need to integrate environmental management into the CAP as a result; agri-environment schemes were made compulsory in every member state. Also the production support funding within the EU an additional pillar of support for rural development was added. The aims of the Pillar II funding were to increase farm diversity and provide uncoupled payments for farming in an environmentally beneficial way; being productive but not at the expense of the environment. The change in policy resulted in financial support to landowners, not payments geared towards production (European Commission, 2012).

Historical development of the CAP (1962 →)

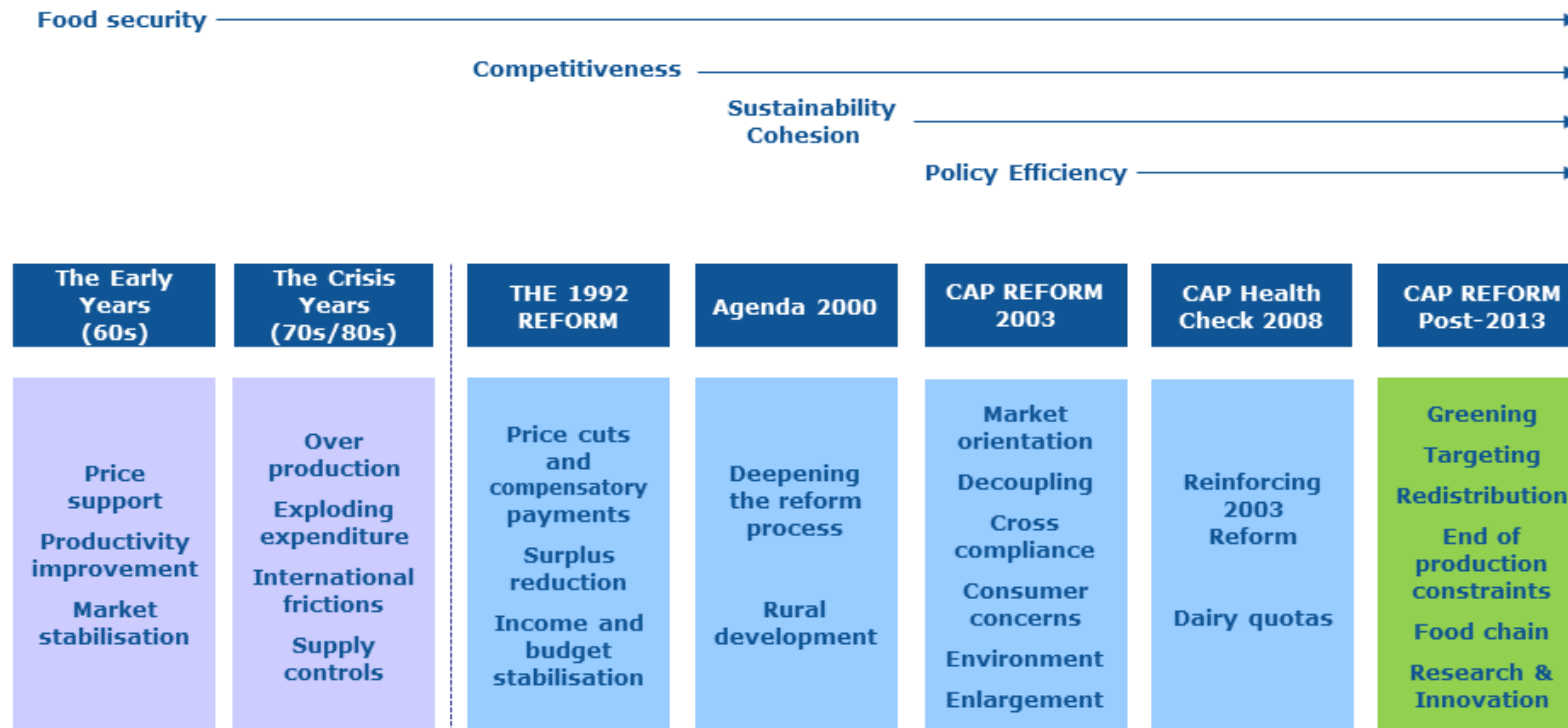


Figure 4 Historical development of the CAP as per European Commission (2016)

2.2 Past agri-environment schemes

The original (1986) Environmentally Sensitive Area (ESA) schemes were the start of a landscape-scale approach to protecting biodiversity across the UK. The schemes were initially limited to 12 designated areas within England and Wales that had defined reasons for environmental protection (Brotherton, 1991). The original ESA's had differing payment allowances according to the particular area specified for protection. Payments varied from £160/ha for reversion of arable to grass in the South Downs ESA to £10/ha for maintaining in by and moorland in the North Peaks ESA. The Cambrian Mountain scheme paid £30 per annum per hectare (Brotherton, 1991). In some areas, the scheme permitted entrants to include as much or as little an area of their holding as they wished. Whereas in other ESA designated areas participants had to include their whole farm, as in the Cambrian Mountains scheme. However, designating areas for conservation on a per individual farm or part of did not support the creation of wildlife corridors to enhance improvement over a wider habitat area that could cross farm borders as research had indicated to be of a great benefit to the environment (Hanley et al., 1999).

The disparity of payment rates between areas along with the variable entry requirements caused some grievances to arise amongst participants of the schemes (Brotherton, 1991; Wilson, 1997). Many small farms/landowners did not have suitable land to fit the requirements of the scheme, despite being within a designated area, and many smaller farms were not encouraged to enter

(Wilson, 1997). Such farms were less likely to engage in a scheme, as the management changes necessary for successful scheme enrolment would be unworkable (Brotherton 1991).

Brotherton (1991), indicated the two most important issues driving farmers/landowners towards enrolling into an agri-environment scheme were:

- Personal attitudes towards farming of livestock and land management.
- Personal understanding of how economic factors relating to the scheme would affect them as individuals.

Extensive studies recognized the complexity of the subject and many researchers recognised a need to consider the environmental attitudes of the farmer (Wilson, 1996). Other researchers looked more at the predictive behavioural attitude (Lynne et al., 1995; Willock et al., 1999; Beedell and Rehman, 2000). Whilst others considered the physical aspect of farm type and fit to be determinant factors for scheme participation (Wilson, 1996; Falconer, 2000; Wynn et al., 2001; Hynes and Garvey, 2009). Such studies may have advanced the knowledge of farmer participation in environmental schemes but created an awareness of the complexities of and the impact on the day to day running of the farm as a business. Greiner (2015) recognised that a significant number of graziers do have a desire to look after their land and the natural assets of that land and this has been an omitted factor in a lot of research.

2.3 Scheme factors

Financial incentives were considered the dominant driver for scheme participation (Brotherton, 1991; Wilson and Hart, 2000). In many cases they remained the deciding factor. However, Falconer (2000) emphasised it was not always the financial payouts of the scheme which determine entry but the private transactions costs incurred with joining a scheme such as legal fees, own labour and negotiating time. Such costs detracted the viability of entry for smaller farms. Quillerou and Fraser (2010) considered farmers to be profit maximisers because they were more likely to enter the poorest quality land, which would then make money from the schemes, over and above its productive value. However, no consideration was given to the possibility it may be because farmers wanted to be seen as tidy or because farmers considered poorer land had most opportunities for environmental protection.

Studies by Wilson (1997) indicated a correlation between farm size and environmental scheme participation. With larger farms (>200 hectares) more likely to be able to counteract any necessary farm management changes (Wilson and Hart, 2000), including livestock reductions in certain areas. The payment received from environmental schemes on larger farms often enabled the potential applicant to either rent more ground or increase production on existing ground to counteract any reduction of stock levels as an environmental scheme requirement. Wynn et al. (2001) and Hynes and Garvey (2009) found no correlation between farm size and environmental scheme participation. A major factor determining entry was that any scheme must fit the farm type and

not force significant changes in the management of the farm (Wilson, 1997; Wynn et al., 2001).

According to Wilson (1997) tenure of the land was not a significant factor in studies of the Cambrian mountain ESA agreement. Previous studies had suggested a rise in rents and the forcing of tenants to join environmental schemes. However, there was no evidence to support this. Only in the Northern Uplands of Scotland had there been a significant correlation between scheme participation and land tenure (Wynn et al., 2001). Present day evidence suggests that farm tenure is correlated with participation in environmental stewardship schemes, as some tenanted farms are let with or without environmental schemes, which determines the rent payable (Radmore, 2013).

Soil type was considered a more determinant point than other factors such as age and pre-entry for scheme participation. Farms with poor soil types were more likely to enter into a stewardship scheme. The land productivity is positively correlated with the soil type (Wynn et al., 2001; Quillerou et al., 2011). It may be argued that poorer soil types are naturally less productive, whereas better soil types may be utilised more efficiently to generate greater income than a stewardship agreement would pay. Hynes and Garvey (2009) proposed it would be more appropriate to offer an environmental scheme contract based upon the individual nature of the farm and soil type; basing the options not on the enterprise as it is at present but on the soil type.

Many researchers recognised that one scheme did not fit all but there was a need for clear guidelines, with a degree of tailoring to enable the scheme to fit the location, which in turn may assist with an uptake in scheme participation (Greiner, 2015).

2.4 Time period of schemes

Entry into stewardship schemes increased as the ESA areas expanded across England and Wales opening opportunities, with 513 000 hectares enrolled in ESA agreements by 1993 (Morris and Potter, 1995), with a staggering 1 152 554 hectares under ESA agreement by 1997 (Hanley, 1998). The participation in the original ESA scheme was for a five year period (Brotherton, 1991) progressing to a ten year period, offering a break clause after the first five years. Initial research indicated participants were happy with the ten year duration of the schemes and duration was not a major factor to influence participation (Wilson, 1997).

However, conservationists argued that ten years was an inadequate period of time in which to make a difference to the habitat and biodiversity. Furthermore, there were no guarantees for the protected and improved habitat to be safeguarded at the end of the ten-year contract (Morris and Potter, 1995; Hanley et al., 1999; Ahnstrom et al., 2008). A further concern was the changing of the mindset of farmers so it would be socially acceptable to have an interest in conservation, but accept the money to enable conservation to fit with the farm (Wilson and Hart, 2000). More recent research indicated an increase in payment rate would entice participants to enter into longer term environmental schemes,

5 to 40 years, as long as there was also a degree of flexibility within the contract (Greiner, 2015).

Once farmers have enrolled in a stewardship scheme they are significantly more likely to enrol in a further scheme. A proposal was to offer short term schemes to entice participation in the first instance in the hope that the participants then continued with long-term scheme participation (Wilson, 1997; Wynn et al., 2001; Hynes and Garvey, 2009).

The Uplands Entry Level Stewardship scheme introduced in February 2010 (UELS) encouraged participation as it was a five-year agreement, that could be extended to ten years and had a broad shallow approach. The scheme built upon the recommendations made by previous research that encouragement into an environmental scheme for an initial short period had a positive impact on participants enrolling with further schemes (Natural England, 2013). However, the difficulty of protecting the restored environment at the end of the scheme had not been resolved. So much of the research has assigned knowledge to the factors associated with encouraging farmer participation in agri-environment schemes, but not in protecting the environment at the end of the schemes. The emphasis for membership of environmental schemes remained voluntary, but there was concern that insufficient land was under environmental schemes and therefore not being adequately protected from poor farming practices (Vanslebrouck et al., 2002).

In order to meet the designated demands of the EU policy, there was a requirement to increase participation in voluntary stewardship schemes. Current environmental stewardship schemes (HLS and UELS) are offered for a period of ten years, with a break clause at the five year stage (Natural England, 2008).

2.5 Group schemes

Current research highlights the benefits of group agri-environment schemes. This applies to agri-environment schemes with individual participants collaborating for shared objectives (Mills et al., 2011; Emery and Franks, 2012). For the extended benefits including financial (Franks, 2011; Franks and Emery, 2013) and for the environmental benefit (McKenzie et al., 2013). There is very little research that explores a more negative impact of collaborative agreements. Research on a landscape scale agreement in south west Australia recognised there were negative impacts on the working relationship between the parties to the agreement and the degree of trust was essential to a good working agreement (MacDonald et al., 2013).

Franks and Emery (2013) examined extensively the use of group supplements available for both Higher Level Stewardship (HLS) and Uplands Entry Level Stewardship (UELS) schemes. The research considered the differences between upland area agreements involving commoners and a lowland group agri-environment schemes. It found that the commoners who had worked together before probably knew each other and may therefore, not require the services of a facilitator. Whereas a membership group associated with habitat alone may not know each other and therefore, require a greater degree of

facilitation for the furtherance of the agri-environment scheme. The research reflected the benefits of the group supplement to provide funding for a new group not having worked together before, who were coming together because of a beneficial joint working opportunity.

Mills (2012) expressed the virtues of collaborative agreements with a net benefit in social capital. Previous studies looked at two cooperative agreements in Wales whereby individuals participated not only because they had a shared interest in the scheme, but they recognised the environmental gain to be had from joint workings, described as a '*homogeneity of ideas and interests*' (Mills, 2012 p.75). Once again the participants could choose whether they joined a scheme or not and their decision did not impact on the group or the other individual members.

One point that is not raised by any of the research is the ability for a possible participant to say no to entering a group working agreement and the subsequent impact on the scheme as a whole. Franks and Emery (2013) suggest that their research has touched on this point and indicates that agreements that are in place and governed by the Local Commoners Association (LCA) '*allow farmers to continue to farm their share of the commons*' (Franks and Emery, 2013 p.860).

Members of Cooperative schemes in the Netherlands receive benefits from the membership. Once again the members join the scheme because of a shared interest and mutual benefit (Franks and Emery, 2013). While all of the benefits

are adequately covered in research, there appears little to no research that would indicate any negative issues arising from group schemes. While the landscape scale approach is widely recognised as being beneficial to wildlife (Franks, 2011; McKenzie et al., 2013; MacDonald et al., 2013; Dijk et al., 2015), none of the research indicated there were any negative issues with a scheme that incorporated more than one participant. Neither does the research look at the impact of one member's decision to join or not on the other participants. Some areas of common land require a majority of common rights holders to enter into an agreement for the agreement to go ahead (Natural England, 2010).

2.6 Farmer factors

Tauer (1995) revealed farmers in the United States peaked productivity between the ages of 35 and 44 years, with a decrease in productivity outside of those years. The average age of a farmer within the UK as 53.30 years and upland livestock farmers at 52.15 years (Rural Business Research, 2006). Correlation between age and scheme entry were not always significant (Wilson, 1997). However, if the entrant was over 40 years of age, then they were less likely to sign into an environmental agreement (Wynn et al., 2001). Evidence suggests younger farmers are more environmentally aware than older farmers, with younger farmers more likely to enter lower-paid, higher environmental gain options (Wilson, 1997). This correlates with the findings of Tauer, where a farmer over the age of 44 years does not attempt to maximise productivity. Although, it may be considered that entering a stewardship scheme may reduce productivity and therefore an increase in entry could be anticipated after 44 years of age. Hynes & Garvey (2009) found younger farmers involved in

extensive farming systems were more likely to enter and stay in a stewardship scheme. A further factor was the correlation between the options chosen within a scheme and the age of the applicant. Younger farmers were more likely to participate in more conservation friendly, lower paid options (Wilson, 1997). Education of the applicant was not significantly correlated with agri-environment scheme entry; however, it did affect the options taken. Younger farmers more likely to choose options of higher environmental value that were often less well paid (Battershill and Gilg, 1997; Wilson, 1997).

There was no correlation between having a recognised successor and entry in an environmental scheme where a farm business had determined a successor to the business. However, such a business was more likely to be interested in environmental schemes and participate in profit maximising enterprises on the farm and farm improvements had been carried out (Wilson, 1997; Wynn et al., 2001).

Wilson (1997) suggested environmental stewardship scheme providers were targeting individual farmers as community leaders within the locality. Community leaders were defined as farmers who were considered to be good farmers, by other farmers. Environmental scheme providers considered the community leaders to be good diffusers of information and farmers were more likely to listen to them. However, there was no correlation with the actions of the community leaders and participation within an environmental scheme to other farmers following suit (Wilson, 1997; Falconer, 2000).

As early as 1995, there was an acknowledgement to consider the dynamics of the farm unit as a whole, encompassing the household, the psychological and cultural variables which all coalesce in the decision-making process (Dent et al., 1995). The farmers' attitudes towards the environment would determine the continuation of the environmental benefits after the schemes have finished (Beedell and Rehman, 2000). Whereas Hynes & Garvey (2009) considered too much emphasis was placed upon consideration of attitudes and the subsequent impact on the environmental concern, and that more emphasis should be put upon researching how farmers respond to regulations. It is not just about the present, but the plans for the business, and the evolution of the family farming business. By recognising that farms and farmers' direction changes over time due to associated factors, perhaps lifestyle, health, finance, expansion and many other unpredictable factors (Ingram et al., 2013).

Several studies applied the theory of reasoned action (Fishbein and Ajzen, 1975) and the theory of planned behaviour (Ajzen, 1991). The theory of planned behaviour was utilised to predict farmers actions towards an environmental policy to better place environmental schemes for maximised participation of voluntary schemes (Lynne et al., 1995; Beedell and Rehman, 2000; Lokhorst et al., 2011; Hansson et al., 2012). Willock et al. (1999) used the theory of planned behaviour to group farmers into a typology according to their predictive actions. Willock understood farmers to be of a more complex nature than agricultural economists prediction of driven only by finances. Vanslembrouck (2002) suggested socio-economic and psychological factors may also influence farmer's participation; it is not always about maximising profit. Attitudes towards

achievement, quality of life, and success were strong influences on environmental behaviour. Dijk et al. (2015) concluded by using the theory of planned behaviour was not a method that could predict farmers involvement with Agri-environment schemes.

Despite research by Dent et al. (1995) suggesting not all farmers or farm households within a designated group are the same. Researchers have continued to classify farmers into groups. Willock et al. (1999) split farmers into two groups; business orientated behaviour and environmentally orientated behaviour, and this suggests that one cannot be both, implicating the theory that a farmer is either a conservationist or a businessman. Many variables affect behaviour and *'that narrow assumptions about human motivation and action will prove inappropriate for modelling real world behaviour'* (Willock et al., 1999 p.300). Whereas Previous research had recognised the difficulties in categorising farmers into specific groups (Wilson, 1996) allotted farmers into five behavioural types; family orientated, businessman/entrepreneur, enthusiast/hobbyist, lifestyle and independent/small farmer. Rehman et al. (2008) concluded it was possible to determine the anticipated response according to the behavioural type, suggesting it would be feasible to target policy according to behavioural type.

The evidence indicates participation into agri-environment schemes are affected by a diversity of factors; many of the farmer factors cannot be changed. The age, education and succession are what they are. There is an opportunity, however, to create schemes that fit with the scheme factors. Acknowledging the

vast diversity of farm types across England, based on soil type, tenancy, the size of farm, enterprise and type of application, whether it is a group of commoners or an individual. The difficulty lies in creating a policy that fits all. This study will consider the present environmental schemes available and consider how they fit with environmental scheme applications from the upland farming communities.

2.7 Present agri-environment schemes

In 2005 the Environmental Stewardship Scheme (ELS) was introduced. There are two levels, the Entry Level Scheme, which has the broad and shallow approach; a point based system that is not competitive amongst participants. Adequate points gained for environmental features results in the successful participation in the ten-year scheme. The Higher Level Scheme (HLS) is a competitive scheme that requires a greater commitment to environmental habitat protection and improvement. The enhanced environmental management needed in areas that are designated areas such as SAC and Sites of SSSI are uniquely suited to enrolment in HLS agreements. The HLS scheme is the main environmental agreement entered into on the Dartmoor Commons. In 2010 The Uplands Entry Level Scheme (UELS) was launched with a start date of 1st July. This scheme could be bolted onto existing HLS Agreements and provided additional revenue for distribution and a compulsory group supplement, UX1 for group schemes on the common. The whole farm parcel had to be enrolled under the scheme for successful entry into the UELS scheme.

Base payments underpin the whole area under the agreement, with a suite of suitable options bolted on that will create the desired outcomes from the scheme. As the commoners' associations are entering the agri-environment scheme, they are recognised as a group application, not as individual graziers with a contract with Natural England. There are certain options available within the scheme for group applicants, namely HR8 Group application supplement (Natural England, 2008).

Current research acknowledges all of the merits of environmental group schemes and the benefits of a landscape-scale approach, but the study does not identify the social impact on the communities associated or enrolled within group environmental schemes. The limited research looked at schemes where all individuals came together under their own free will, as is the case with the Dutch co-operatives (Franks, 2011). Where there is shared local opinion, participants are drawn together with a shared belief. Group schemes emphasised a requirement to share common objectives, for a group to start small and then grow, for members to know each other, in order to be successful Mills et al. (2011).

There is very little if any written evidence to suggest anything but a positive impact on a community of group agri-environment schemes. This study is therefore, being undertaken to ascertain if certain factors were specific to group collaborative schemes, whereby the group come together because of membership as opposed to a common thought.

The area, Dartmoor was chosen as it has many differences to the other upland areas in England that are governed by the same environmental schemes. Dartmoor is the warmest, wettest and most southerly of the upland regions of the UK, there is a strong possibility that there are climatic differences in the vegetation of the uplands. Such unique factors may not be reflected in current agri-environmental policy and yet may have a significant contributory effect on the delivery of the schemes and perhaps the uptake of the schemes.

At present, the success of environmental schemes is measured on environmental gain only. Indicators of success and SSSI habitat improvement are amongst the methods used measuring for agri-environment scheme success (Natural England, 2010). Agri-environment schemes impact on more than just the environment. The funds introduced to support a scheme filter out to other businesses in a community. There is limited research looking at the wider perspective of the impact of agri-environmental schemes (Mills, 2012).

Chapter Three Methodology

3.1 Introduction to methodology

The research incorporated a mixed methods approach, with data collected from respondents living in the research area of Dartmoor by a postal questionnaire and followed up with one to one interviews with a selection of respondents residing in the study area. Data was then analysed using both quantitative and qualitative methods.

There are various accepted methods of obtaining data from a broad audience. Options include the use of secondary data from previous research, group forums, postal surveys, web-based and telephone questionnaires, face to face or telephone Interviews (Saunders et al., 2016). Similar research studies have based their findings on questionnaire data (Lynne et al., 1995; Morris and Potter, 1995; Wilson, 1996; Willock et al., 1999; Beedell and Rehman, 2000; Wilson and Hart, 2000). According to Fox et al. (1988) the three most important factors to affect response rates for postal questionnaires were the alliance with a university; a stamped addressed envelope as opposed to a business reply envelope and pre-notification of the survey. Nulty (2008) highlighted various research where there was an increase in response rates to paper questionnaires when compared with online web based questionnaires, but does point out that in many cases, the paper questionnaires were hand delivered. This may have been a significant factor to the response rates.

The research area, Dartmoor, is situated within the County of Devon; an area of upland designated as a National Park in 1951 encompassing 954km² of which around 36 000ha are common land split into 92 common land units (Waldon, 2015). Dartmoor has its own Dartmoor Commons Act 1985, which does mean that the local commons can create associations, but have no delegated powers. The Local Commoners Associations (LCA) have a pivotal role in the research. The membership of the LCA is only by right of common on a particular common. The members are not drawn together by a shared interest as with other organisations that have undertaken some form of group agri-environment work Dartmoor is still a very traditional grazed landscape, with commoners still actively using their grazing for ponies, sheep and cattle. The farming community on Dartmoor is a close-knit community, where the interaction of the families with the landscape and environment is still important.

Dartmoor, Bodmin Moor and Exmoor are the most southwesterly of the UK uplands (Figure 5). as a result have climatic differences to other upland areas of the UK. The highest point on Dartmoor is High Willhays at 621m (DNPA, 2015). Compared to the highest point in the Pennines, Cross Fell at 893m and Scafell Pike at 978m in the Lake District (Walking Englishman, 2016). Whilst Dartmoor is an upland area, the overall mean height is less than mean heights in upland areas further north.

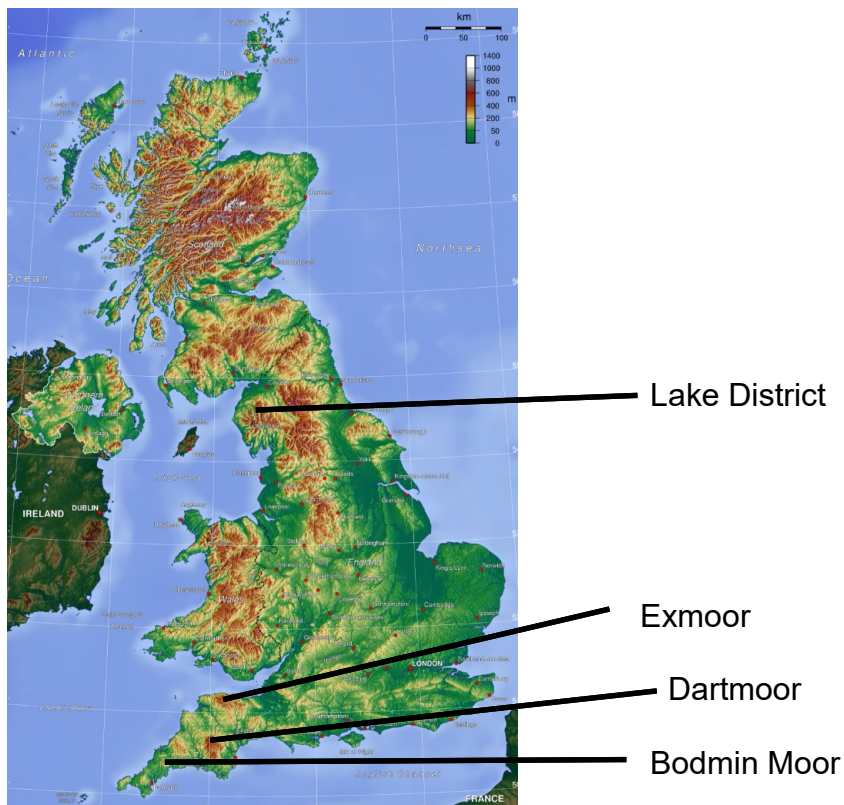


Figure 5 Map of upland areas of the UK (Phillips, 2016)

The average rainfall for Dartmoor is 2150mm at Princetown on Dartmoor, with the average comparable only to some areas of the Lake District. The majority of upland areas in the UK do not receive such a high rainfall as the more westerly uplands of Dartmoor and the Lake District (Figure 6). There is a marked variation in the annual average temperature between the upland areas of the UK, with Dartmoor notably warmer than other upland areas (Figure 7).

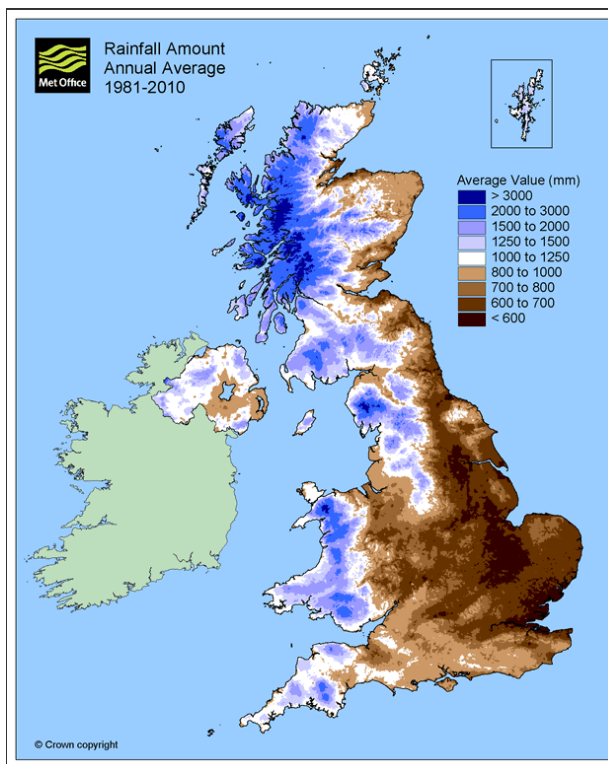


Figure 6 Annual average rainfall for UK (Met Office, 2016)

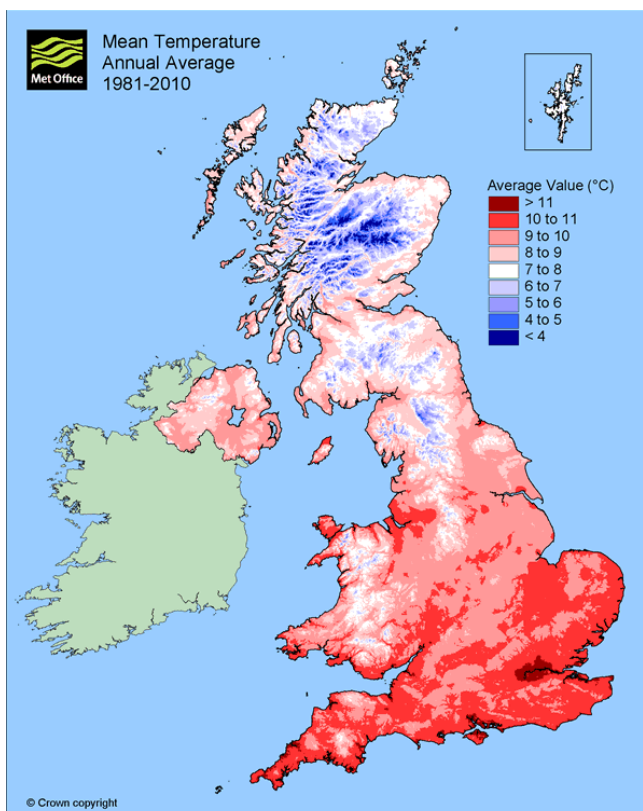


Figure 7 Mean annual temperature of UK (2016) (Met Office, 2016)

The geographical and climatic variation of the UK uplands impacts upon the dominant vegetation. The distribution map for *Ulex gallii*, is indicative of the variation of vegetation types found across the UK uplands (Figure 8).

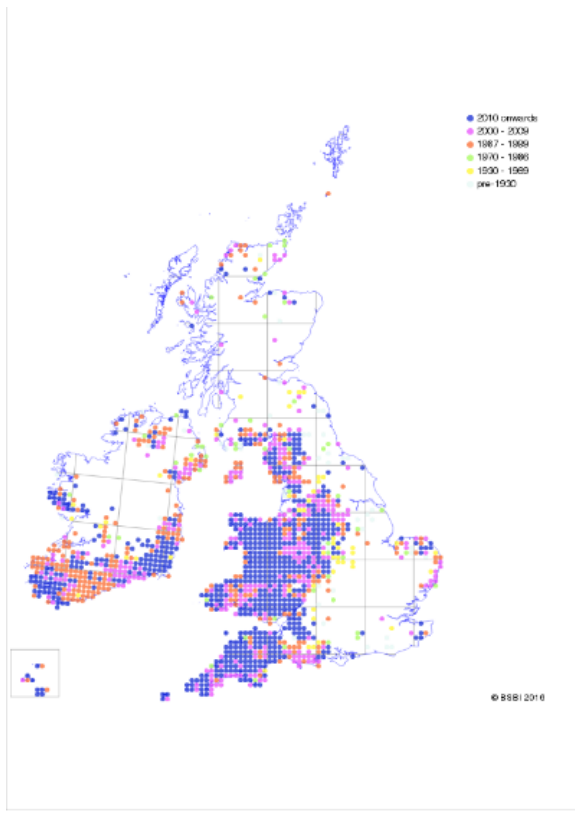


Figure 8 Distribution map for *Ulex gallii* (BRC, 2008)

Dartmoor Commons have more than 1550 commoners registered, not all of whom graze livestock on the commons. The method for determining the number of actual persons grazing livestock on the commons is complicated. The only accurate method of ascertaining the number of actual graziers is through the Local Commoners' Associations and asking them individually for the information. The recent Dartmoor TB control plan did incorporate 120 cattle graziers on Dartmoor. It is considered there are more sheep graziers than cattle graziers. Therefore the actual number of grazing commoners is in the region of 120 (Waldon, 2015).

The Dartmoor Commoners Council is a statutory body set up under the Dartmoor Commons Act 1985 and this organisation holds a live register of all of the rights holders on Dartmoor Commons today who wish to register with them. The Register is held with Devon County Council, whereby all of the entrants for the 1965 Registration Act are listed along with the allocation of rights. Many of these entries were challenged at the Commissioners hearings in the 1980's and many rights were removed. There are still a considerable number of common rights in existence that are not registered with the Dartmoor Commoners Council, for many reasons, from the land being developed or the owner of the rights not interested in registering them with the Dartmoor Commoners Council.

The information held on the live register, produced as a Common Land Report per individual common, listing the number of rights and details of the rights holders were used to access potential respondents. The list of those persons with common rights is no guarantee as to if the common to which the rights are affiliated or them as individuals are signed into an environmental scheme upon the common. Neither is it a method of ascertaining if the respondent grazes the common or not. The persons physically grazing on the commons is known locally, and by those who are party to an environmental agreement, there is, therefore, a discrepancy between the data held by the Dartmoor Commoners Council as to graziers on Dartmoor.

There were 1550 potential respondents. However it was not feasible within this research project to contact all the prospective respondents, due to time-scale and cost implications. The research selected commons from across the four

quarters of Dartmoor in an attempt to cover as wide an area as possible, not limiting the study to one small area. Many commoners have common rights on more than one Dartmoor Common, in such instances, their name was selected only once in the study. The list held by the Dartmoor Commoners Council held no correlation with the membership of the Commons Association agri-environment schemes. The questionnaire was sent to commoners; however, their participation in the commons agri-environment agreement was unknown.

The research was undertaken in two parts. The first part of research requested information from respondents via a postal questionnaire. Questionnaires were sent to 235 respondents selected from the common land report for a cross-sectional sample of Commons.

3.2 Research ethics

As with all research where people are concerned a certain protocol to follow. Plymouth University Handbook guided correct ethical research practices. (Plymouth University, 2012). The author applied for Ethical approval prior to the research being undertaken (Appendix A).

A total of 235 Dartmoor commoners received the postal questionnaire with a covering letter. The letter explained completion was voluntary and all information supplied with no information personally attributed to the participant. All responses were completely anonymous, excepting of a small number of replies where the contributor was interested in the research and requested to be kept informed.

Prior to the interview, respondents were telephoned, and the author explained verbally about the anonymity of the process and the respondent's right to withdraw at any stage. An information leaflet provided the interview respondent with details of the study and their right to withdraw (Appendix B). All data from the interviews were transcribed and coded to ensure there was no correlation with the respondent that could be traced.

It was not the intention of the author to interview any minors or vulnerable adults and to ensure that all participants were not exposed to any difficult or harmful situations during the research.

3.3 Questionnaire development

The aim of the responses from the questionnaire was to provide a broad indication of the effect and issues relating to environmental agreements on the commons of Dartmoor and how the agreements are perceived in relation to the business. It was considered inappropriate to seek information of a personal nature regarding the current and past relationships with neighbouring farms, especially via a postal questionnaire, such personal questions may have resulted in a greater amount of questionnaires ending up in the bin. Such details could be investigated within the one to one interviews. Questionnaires have been successfully utilised in other similar research (Lynne et al., 1995; Morris and Potter, 1995; Wilson, 1996; Willock et al., 1999; Beedell and Rehman, 2000; Wilson and Hart, 2000).

Whilst other methods of obtaining information were recognised, including telephone interviews, Internet based surveys and group discussions, for this research, the questionnaire was deemed most appropriate because of the ability to reach a wide range of participants. The standardised questionnaire responses would provide structured data that could be used for quantitative analysis. (Saunders et al., 2016 p.101). The major benefit of a postal questionnaire was the relative ease of obtaining responses from a large number of the demographic relative to the costs incurred. There is a risk that a poorly worded written questionnaire will confuse a potential respondent and will negatively impact on the response, if any is returned (Hague, 1993 p.102) Other negative factors of a postal response are the presumption that the literacy levels and visual ability of the respondents are adequate to complete the forms (Oppenheim, 1992). There was a statistically significant improvement in the response rate because of the inclusion of a stamped addressed envelope with a postal questionnaire (Fox et al., 1988; Edwards et al., 2007).

An internet-based questionnaire was ruled out on the grounds of poor internet access across some areas of Dartmoor (Scropton, 2015). There were further drawbacks associated with an Internet survey as there was no direct method of accessing the email addresses of potential respondents across Dartmoor. If a website or forum was used to host the questionnaire there were no methods of ensuring respondents were from the research area (Saunders et al., 2016 p.227). The postal questionnaire was the best method of accessing respondents in the research area.

Group forums were not considered relevant to this particular study as the views from the individual participants were sought, without the hindrance or influence of other participants affecting the responses. The potential for distortion of response from either group discussion or even the distortion within the questionnaire response was recognised as a potential issue. Central tendency, acquiescence and social desirability bias were all possible factors that may have a significant impact on the actual responses given. There are many types of bias that may impact upon the results, many of which are well documented in various texts (Saunders et al., 2016; Oppenheim, 1992; Nadler et al., 2015; ASQ, 2015).

The first draft of the questionnaire was trialed on three known respondents. Their feedback enabled repetitive or poorly worded questions to be restructured or removed. A second version of the questionnaire was then trialed on a further known respondent. From this the questions were kept the same, but put forward in a more succinct manner. It was intended for the data requested not to be of a personal nature. Therefore there is no data relating to the age or gender of the respondent. The questionnaire can be viewed in Appendix A.

The questionnaire comprised a total of 16 closed ended questions and three sections of Likert style questions, providing data that could be statistically analysed with non-parametric tests. The creation of the questions within first closed ended section requested background information of the farm and the past farming practices involving the commons. The second section then asked

questions about the current scheme involvement, followed by questions of specific options within the scheme at present.

The decision not to include any open-ended questions within the questionnaire was to ensure the response time for the questionnaire was kept to a minimum, assisting with a positive return rate. The interviews would provide a better opportunity to allow more feedback from respondents.

The Likert questions were split into three parts, two were a bi-polar response scaled one through to five, with one being 'strongly disagree' and five being 'strongly agree' and the third section, Likert style, scaled one to five, but one was 'very difficult' and five was 'very easy'. The Likert style questions were coded from one to five using a sliding scale of tick boxes with only the bi-polar points identified. Research has shown that participants do interpret the midpoint differently and this can impact on the interpretation of the results (Nadler et al., 2015).

The questionnaire data was obtained during the period September to December 2013. The questionnaire was formed of three sheets of A4 paper, printed on both sides, with an introduction to the research project on the first page including contact details for the author.

The size of the questionnaire and the number of questions were considered appropriate at three sheets of paper, printed both sides, with the covering letter on the first page. There were 37 short answer questions in total. Edwards et al.

(2007). indicated the response rate increased when short questionnaires were used, however it is uncertain as to the classification of a short questionnaire. Whereas Childers and Ferrell (1979) implied a short questionnaire to be four pages as opposed to a long questionnaire at six pages. Their research did indicate the length of questionnaire not to be a significant factor, whereas the size of the paper, that the questionnaire was printed on, was significant in the response rate. The standard A4 size obtaining a higher response rate compared with a slightly larger size sheet.

Studies indicate that there are certain techniques that can be employed that significantly increase the response rate, including a link to a university, a letter indicating a survey is imminent and the stamped addressed envelope, which is better than a business reply envelope. Interestingly, research indicated the positive benefits of using a first class stamp for the outgoing response, as opposed to using a second class stamp (Fox et al., 1988; Edwards et al., 2007). Therefore the questionnaire was sent in a white envelope using white A4 paper, printed with black ink, along with a stamp-addressed envelope and a letter explaining the nature of the research and linking the research to Plymouth University. But many of the accepted methods of improving the response rate could not be employed here because of cost implications, including the use of financial incentives and a follow up reminder (Edwards et al., 2007).

The response rate from the postal questionnaires sent to 235 Dartmoor commoners was 32% (n=75). This may be considered as a small sample size,

but it is however, recognised within this research that an improved response rate may have been beneficial to improve the confidence level of the analysis.

A recent bovine TB survey for the cattle keepers across Dartmoor carried out by the Dartmoor Hill Farm Project provided a good response rate, with 47 responses out of 60 potential respondents (DHFP Newsletter March 2014). It may have been due to the subject matter of the survey in this instance, which induced such a high response.

Saunders et al. (2016) indicates the importance of having in excess of 30 responses for statistical analysis, which has been achieved, there are many research questionnaires that have achieved a far greater response rate. Morris and Potter (1995) achieved a response rate of 43.5% (n=101) and Wilson (1996) delivered all 176 questionnaires by hand to obtain 100% response rate. Cummings et al. (2001) stated the average response rate for postal questionnaires in medical studies to be 54%. Greiner (2015) had a response rate of just 15% for questionnaire data, but noted the responses for their research covered a wide geographical area and were part of a more complex method of data capture. Further research suggests the response rate does not reflect upon the validity of the research but the explanation of the response rate and some justification as to the response rate will better validate the research (Morton et al., 2012). Therefore the response rate in this instance was deemed acceptable at 32% as when combined with the interview data, the combination provided a more robust sample of evidence.

3.4 Interviews

The second part of the research comprised one to one interviews with selected Dartmoor commoners. The respondents were selected across the Dartmoor quarters. An initial telephone call was made to potential respondents to ascertain if they were willing to participate in an interview and if the response was positive, to arrange an appropriate time for an interview. A total of 14 persons were willing to be interviewed. It is important to note that there was no direct correlation between the interview respondent and the questionnaire data. Interview respondents were supplied with an information sheet prior to the interview, Appendix C offering the right to withdraw from any specific question, or the interview at any time. Respondents were made aware of the anonymity of the interview and the confidentiality of the data obtained.

Of the 14 interviewees, there were a small number (3) of participants who did not graze livestock on any of the commons. It was recognised that this was a disproportionate number of non-grazing commoners to grazing commoners, but this was not considered to be an issue that would affect the results. The interviews were carried out during the period August 2014 to March 2015. The appointments were expected to last for approximately an hour, but on every occasion, the conversation flowed and the interviews were in excess of two hours in length. This was considered a positive reflection on the interviewer as the interviewee was willing to discuss at great length not only the history of themselves and the farm, but to provide a great insight into the factors affecting them as a direct result of the agri-environmental schemes on the common.

The aims of the interviews were to explore the background of the farming enterprise, how long the respondents had farmed in the area and to set the scene as to how the farm fitted with the use of common rights. Setting the scene also incorporated the community aspect and the social interaction with other commoners and the views of the interaction. Finally a better understanding of the respondent's knowledge of the group agri-environment schemes on the common. The guidance questions for the interviews can be viewed in Appendix D.

A pilot interview was undertaken with a known respondent and from this interview the questions were amended to remove any that were repetitive or irrelevant. The questionnaire was broken down into this became irrelevant as the respondents were very informative of their family history and took great pride in providing the details.

The interviews were recorded using a voice recorder. Respondents were made aware that the interviews were being recorded for the purposes of transcription. The interviewer made a point of ensuring the voice recorder was not the main feature on the table as it was considered it may distract some respondents from speaking freely.

3.5 Data analysis

3.5.1 Questionnaire data

There were two incomplete questionnaires, the decision was taken to remove these completely from the data analysis, as the relationship between questions for those respondents could not be ascertained and this was an important factor of the data analysis.

The questionnaire data from the 73 fully completed responses was entered into IBM SPSS and the data was coded as described, to enable statistical analysis to be carried out. For the 16 closed ended questions, where the respondents were asked to provide a yes, no, don't know response the data was coded as follows

Yes = 1

No = 2

Don't know = 3

Not applicable = 4

Some of the questions requested the response to a time scale or period, the years were grouped to enable more effective analysis and to ensure there were adequate number of responses per group so valid data analysis could take place.

When asking how long the respondent and the family had farmed around the common, the responses were coded as per Table 1.

1	Ten years or less
2	11 to 50 years
3	51 to 100 years
4	101 to 150 years
5	151 years plus

Table 1 Coding for responses to time period a respondent had farmed around the common

For the question relating to the period of time a family had livestock grazing the common, this was coded as Table 2.

1	One to 30 years
2	31 years plus
3	Not applicable

Table 2 Coding from responses to how long a family had grazed livestock around the common

Where respondents were asked if they would consider using their common rights to graze in the future, and if so, how long into the future, the responses were coded as per Table 3.

1	In the next five years
2	In the next ten years
3	Not considering grazing in the future.
4	Not applicable

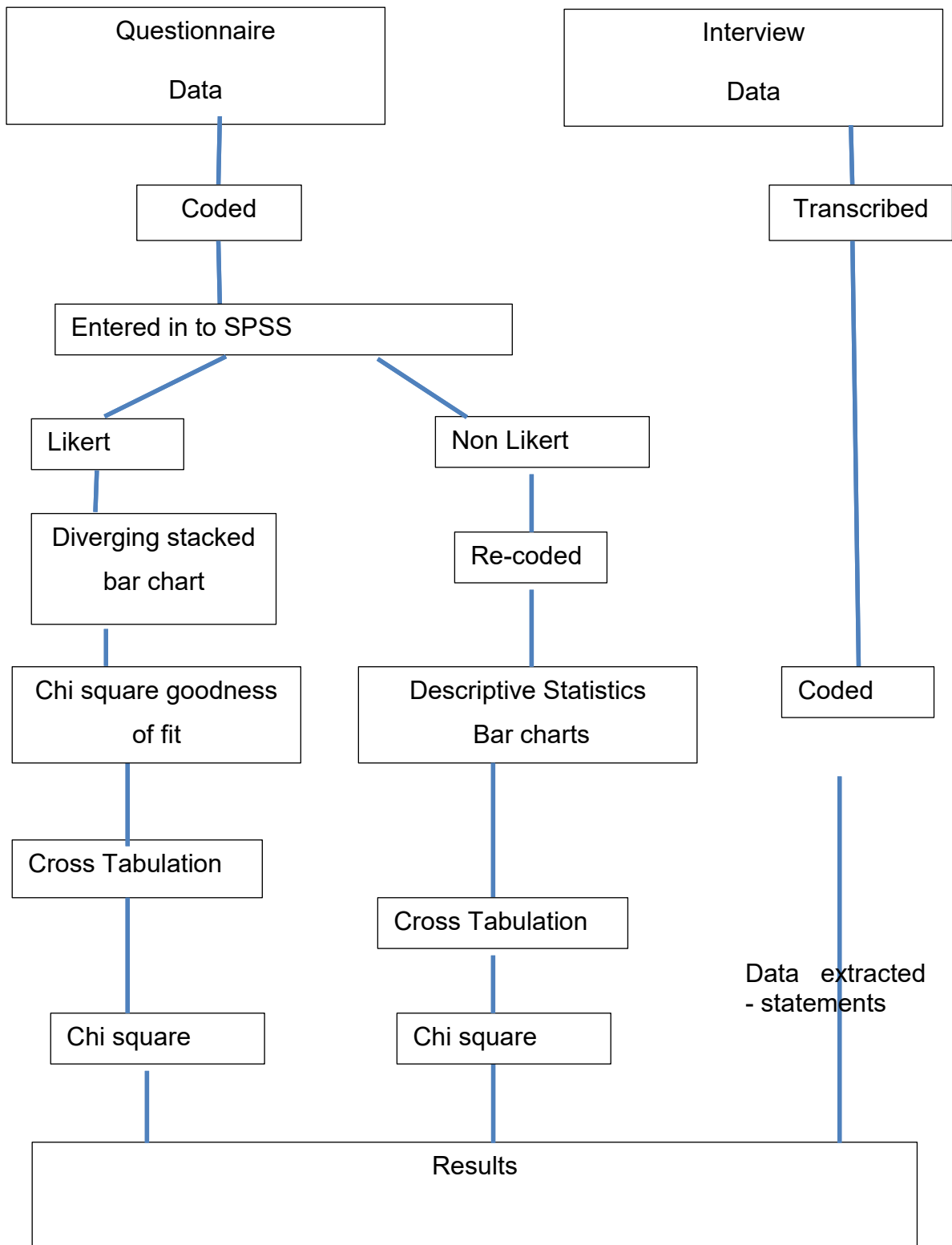
Table 3 When respondents would consider grazing the common

The Likert data for the three parts were coded in SPSS as a scale of one to five with one representing the 'strongly disagree'/'very difficult' option through to five representing 'strongly agree'/'very easy'. However there was a problem with the data analysis as there were insufficient numbers of responses per category for successful data analysis. It was therefore decided to re-group the responses from a five point scale to a three point scale with the responses for 'strongly disagree'/'very difficult' being incorporated with 'disagree'/'difficult' and 'strongly

agree’/’very easy’ incorporated with ‘agree’/’easy’, leaving a singular response group in the middle representing the no opinion or do not know group.

There has been much debate as to the analysis of Likert scale data, as the data is considered ordinal and the distance between the points on the scale not to be measurable so as to create an interval scale. Carifio and Perla (2008) indicate it is acceptable to use the means whereas other researchers warn against using such methods as it would not provide an accurate picture of the results within the mean score (Robbins and Heiberger, 2011). Likert scale data is accepted as most suited to non-parametric statistical analysis, however more recent research does suggest that with a large enough sample size, the data can be analysed using parametric statistical analysis, providing robust results (Sullivan and Artino, 2013; Wadgave, 2016; Carifio and Perla, 2008). The Likert data was also displayed as a diverging stacked bar chart (Robbins and Heiberger, 2011). Recognising the smaller sample size within this research, non-parametric tests were therefore employed; Chi square goodness of fit, Pearson’s Chi square and Fisher’s exact test. A diagrammatic representation of the methodology employed with the data is shown in Figure 9.

Figure 9 Diagrammatic representation of data analysis



Initially, descriptive frequencies were looked at, with presentation in simple bar charts. All of the data, including the Likert style questions were analysed by this method. A diverging stacked bar chart was considered most appropriate for displaying the responses from the Likert style questions.

The questionnaire data was then subjected to cross tabulation. The Likert data was analysed by the same methods, but the Likert sections of the questionnaire were analysed as separate data.

As the Likert data met the four following assumptions

- There was at least one categorical variable
- An independence of observations
- Mutually exclusive responses
- At least five expected frequencies

Chi square goodness of fit could be carried out on the Likert question data.

The data within SPSS for these questions were not weighted before the analysis, as it was not necessary to do so. The goodness of fit test would measure if the actual responses to the Likert questions varied significantly from the expected responses.

One way Chi square analysis was carried out on all of the questionnaire data. Where the statistical data for the Chi square analysis indicated there were more than 2 cells with an expected count of less than five, then Fisher's exact test of

independence was used, as this was more appropriate than the Pearson's Chi square analysis.

3.5.2 Interview data

The 14 recorded interviews were transcribed and coded according to the status of the interviewee, grazing or non-grazing commoner. The anonymity of the respondent was maintained. The use of Nvivo software was considered for further analysis of the interview data, but as the groupings for the responses were identified, it was considered acceptable to use Excel for grouping the responses into nodes.

From the two main sub headings of the research; Farmer factors and Scheme factors, nodes were identified as per Table 4. All responses to the interview questions were positioned under one of the sub headings. A coding system was created to relate the quote used in the results section back to the original transcripts.

Hermeneutics was not used in this study, although it was considered that it could have provided some very useful information due to the small number of interviews and the detailed transcription of the interviews would have provided a suitable opportunity, although hermeneutics is not widely used in compared with grounded theory application (Mann, 2007).

Farmers Factors	
People	Generations of farming
	Working together
	Generations
	New grazing members
	Local knowledge
Opinions	General public's views of respondents
	Conflict Neighbours views of respondents
	Grazing members and non-grazing members
History	Number of common rights
	Importance of common rights
	Historic grazing practices

Scheme Factors	
Agreements	Entry without participant
	Influences to join
	Negotiation issues
	Group schemes
	Agreement workings
	Environmental Agreement impact
	Environmental schemes impact
	Past schemes impact
	Livestock numbers
	Grazing

Table 4 Groupings for Interview analysis

The interview data was combined with the results from the questionnaire data, with specific extracts underpinning the questionnaire results. It became apparent that the interview data was also a significant stamen of social history and therefore the extracts were as significant in their own right. The combination of a whole text approach to the results section provided a true reflection of the feelings and a better understanding from the respondents and therefore to the researcher than purely statistical analysis.

The results are presented under the main headings of the research with a combination of the statistical data from the questionnaire that is then integrated with the statements extracted from the transcribed interviews.

Chapter Four

Results

4.1 Scheme Factors

4.1.1 Time period of the schemes

Based on the combination of questionnaire data and interview data.

Many of the Dartmoor farmers were concerned with the time period of the schemes at ten years as being too restrictive to permit any amendments to their businesses during the period of enrolment in the agri-environment schemes.

‘ These schemes are alright on paper, but then you get a year when your calving goes out of sync when we had the wet summer, had a lot of cows not in calf, then it messed it all up. We had it split roughly halved, but it messed it all up, had to get cows home to go to bull, then there aren’t enough cows up moor, need to have 60 cows, not enough flexibility you see. Not on a common where everyone is being watched because they are receiving money, you are supposed to have such and such there because you are receiving money.’ (A6 227 – 223).

Some of the younger generation recognised a need for the ten year scheme to impact upon the habitat. They understood that benefits to habitat did not occur overnight and took time for a change to occur. *‘Five years would not be long enough to see a sizable change.’ (A1 8).* Many of the older generation of respondents farmers did not recognise any time scale associated with environmental gain, but more of a single concern as to their farming businesses. They indicated their displeasure to the agreement and would have pulled out at the five-year break clause if they could have.

Much of the research into the time period of agri environment schemes had looked at what time period was beneficial from an environmental perspective

(Morris and Potter, 1995; Hanley et al., 1999; Ahnstrom et al., 2008) but not necessarily what time period was most suitable to the applicant (Robbins and Heiberger, 2011).

Whilst there were no positive comments from the respondents relating to the time period of the schemes, the term of the agreement and the subsequent financial security for that term as offered by the schemes was positively recognised. One respondent referred to the environmental payments as the '*financial backbone of farming on Dartmoor*' (A6 124 – 125). Interestingly one farmer considered that at the end of the ten year scheme it may be necessary to repair the damage done by environmental agreements.

A recognised draw back of the ten year scheme was the difficulty in attracting new grazing commoners to the commons. Respondents considered that it was all about '*if the face were to fit with the existing grazing members.*' Some agreements were not open to any new members and other agreements would have to have both payments and grazing rights allocated to new grazing members. Many internal agreements did not permit a payment to be made to a new grazing member unless they had kept their livestock on the common for a period of two years.

Despite the negative comments about the current scheme there was a strong indication from the interviewees that the majority of respondents could only envisage a future of their farm within an environmental scheme and referred to the next scheme and the future.

'We can't manage without it. I think a lot of it is for the wrong reason. But nothing stays still and nobody wants to go back. So you have to go forward, and I think it is rather sad, we are coming out of one scheme and going into another so we are going to have like 12 – 18 months of no payment on this particular area. So financially you have to think what else are we going to do to cover that in the meantime, and it is really sad to think that is how farming life goes. It is governed by one grant after another rather than managing more individual's thoughts.' (A6 164 – 170)

In conclusion, the time period of the scheme was not indicated as being a determinant factor for scheme participation. It was considered by many of the members that ten years was not the right time period, mainly because of the restrictions imposed by the agreement and the inability to amend grazing substantially during the period of inclusion. There was a concern on the impact of the time period of the agreement of not accepting new entrants grazing the commons.

4.1.2 Knowledge of the schemes

The majority of respondents, 91.8% (n=73) knew which scheme their common was in. However the details as to the options within the HLS Agreement was not so well known. Questions were asked that related to a particular option within the agreement, Group Supplement (HR8), is included within common land agreements on Dartmoor to assist with the facilitation of group applications. Questionnaire respondents were asked if they thought this supplement had influenced their decision to join, in the knowledge that the administration costs could be potentially covered by this supplement. The majority of respondents 69.9% did not know if the supplement influenced their decision to join. This is either because the respondents did not know any details of the options within

the agreement or they had no opinion as to the influencing their decision.

In addition, those that grazed the common were asked if they knew what percentage of their total number of rights they could graze, 42.5% (n=73) of all respondents knew what number of livestock they could graze under the terms of the agreement.

A common theme amongst grazing commoners was the lack of understanding as to what Natural England as the regulatory body and the Agreement actually wanted delivered.

'I would like to know, because it would then help me to make decisions and understand why they are doing stuff if I know where they are and what they want it to be like and how they think they are going to get there.' (V 13 -16).

A point that was mentioned on numerous occasions by many of the grazing respondents was that they felt they had not been listened to during the drawing up of the HLS Agreements, that the views and knowledge of the grazing commoners, with such a long term relationship with the common were not taken into account.

'I do not think it is taken a lot of notice of, I don't think the powers that be took account of local knowledge as far as I know.' (P3 208 – 209).

'I don't think they have asked us, they have told us.' (P3 34).

'that is the biggest problem, you cannot have an exclusion on one common or less sheep on one common than there is on your neighboring common. All it is, stuff moves around and that's all that happens. But can you tell these people?' (P3 151 – 153).

One farmer commented on how he felt that things were better prior to agreements.

'I think the moor was better managed then, because the farmers managed it to look after their animals whereas now there is a piece of paper that says the month and what you have to do.' (P3 232 – 234).

On a more positive note, one interview respondent considered that dialogue had improved within a stewardship agreement on his or her own farm.

'yes, they are moving into more of what they do listen to what works for your particular farm.' (P3 224 – 225).

Another issue was raised by many of the respondents as to a definite lack of understanding as to what Natural England wanted in terms of the habitat on the common. Many respondents referred to the term overgrazing and there was an obvious lack of understanding by the commoners as to what this term really meant. Many reiterated that there had been a large reduction in the livestock numbers and this must reflect on the habitat.

'How is it overgrazed, nobody has more stock there so how is it overgrazed.' (N1 -39).

'As for the vegetation that they want to create back to what I can remember and we only have photographs which I am trying to find of the heather and that from years ago, the only places I can see it coming back is like the side of the moors and that but it is still under agreement right but it is nothing to do with them. If you look out there now it is in a worse state now to what I can remember it. It got overstocked, it swung too far the other way, they not only under stocked but we have got to go up and down with these figures throughout the year with the climate changing.' (G6 79 – 85).

'Not come out after an ESA scheme and say it is overgrazed. How is it overgrazed?' (I5 253 – 254).

A young commoner summed up very well the possible problem of the lack of communication and the lack of understanding within the farming community.

'I think the environmental schemes are also – you were saying how the commoner or farmer doesn't necessarily understand all of the numbers on the table – it is also to do with they don't understand why is part of it, they know Natural England have these environmental things but they don't really know what they are for, they don't know what they are looking for, they don't know the pros and cons of having sheep or cattle or ponies up there and I also think that is the main part of the problem, because they are never told this they are just told that this is what's happening and then understand why Natural England want less sheep and more cattle and so that causes dispute but actually if they knew why, they may not accept it, but they knew why, it might help matters. Because it is just another element they do not know.' (AP 21- 28).

In summary

- The commoners who graze livestock on the commons have a good understanding of which environmental agreement their common is in and their grazing allocation under the agreement.
- The Commoners do not have a good knowledge as to the options that make up the agreement.
- Many respondents indicated that they did not know what Natural England, as the agreement holders wanted for their common; what were the measurable outcomes.
- The respondents were frustrated by the lack of discussion upon entering the agreement and many considered they were not listened to.

4.2 Farmer Factors

(Ingram et al., 2013) recognised the complexities of farmer participation in agri environment schemes. This was emphasised within the participant's dialogue in this research project. The majority of respondents from the questionnaire data grazed the common as per Figure 10, whereas the interview respondents were split equally between those that used their common rights to graze and those that chose not to.

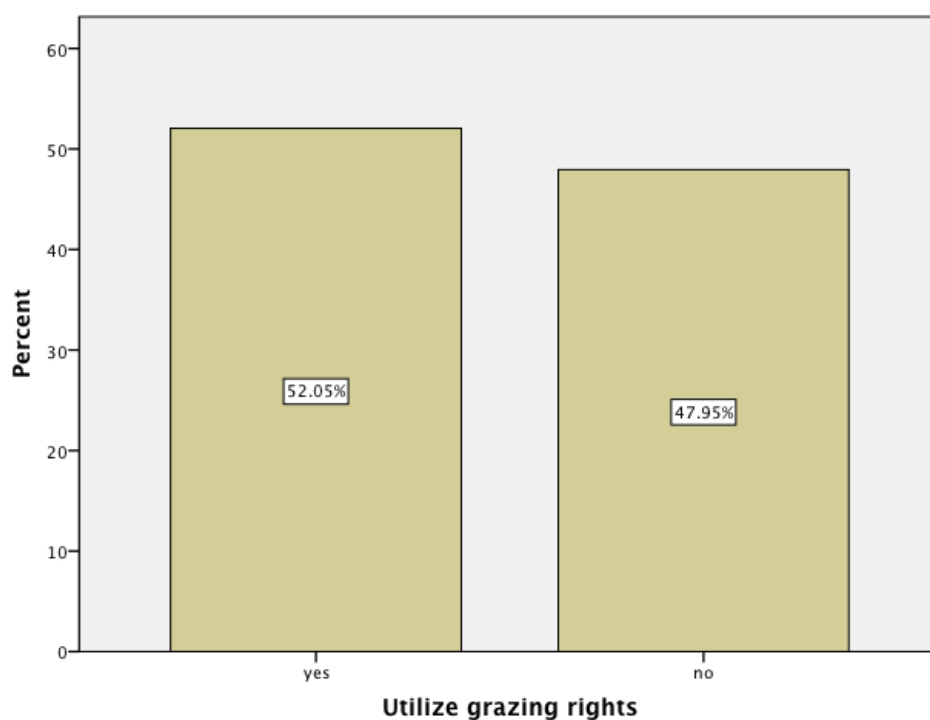


Figure 10 Bar chart displaying number of commoners who use their right to graze

Many of the farmers had a great depth of knowledge of their predecessors and the farming names had not changed for generations. The numbers were fairly similar to how many had farmed in the area for more than fifty years or less, there were only 13.3% (n=73) that had farmed in the area for less than ten years.

Of the 75 respondents, 54.7% exercised their common rights, that is they may have utilized the area allocation of common rights for their Single Farm Payment Scheme. It was surprising that not all the respondents utilized the common rights, however, it is possible that the question asked was not clear enough and the respondents may have considered this only applied to the utilization of grazing rights.

During the interviews, some respondents stated that they did not claim for their common right on the Single Farm Payment Scheme as they thought they had to be grazing livestock on the common to do so. This is not the case, and this would suggest a reason for the response rate within the questionnaire data.

From the respondents whose families had historically grazed their livestock on the common (n=39), 45.2% had grazed livestock on the common for in excess of 31 years (Figure 11).

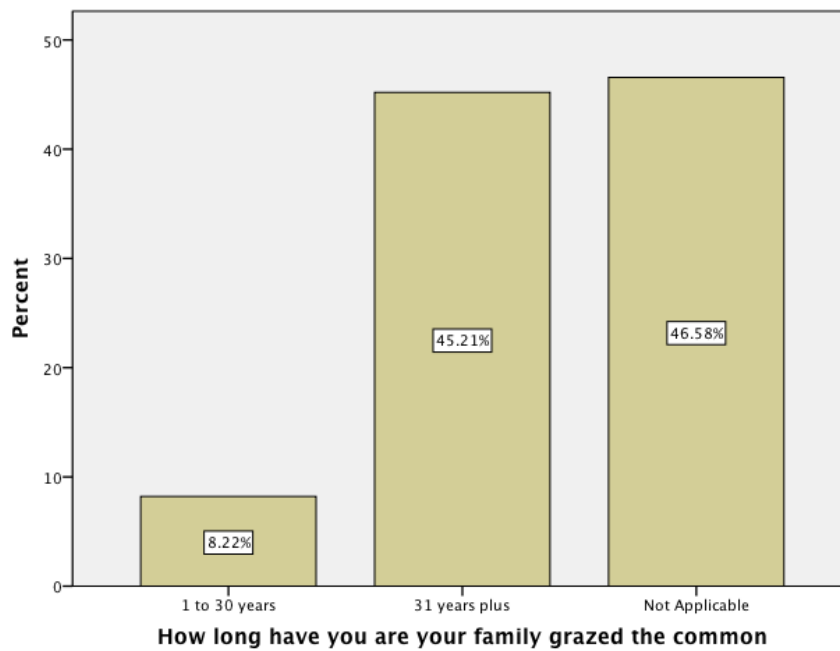


Figure 11 Bar chart displaying the period of time the family have had livestock grazing the common

The result may be associated with the overall duration of agri-environment schemes on Dartmoor, with the commencement of the first agri-environment schemes in 1998, and by default, limited opportunities for new grazing participants and or the ease at which participation in a scheme could be exercised.

The data indicated a significant relationship between the length of time a family had farmed around the common and the use of grazing rights on the common. Respondents who had a great history of farming the common, in excess of 51 years, were more likely to use their grazing rights, compared to those whose families did not have such a long history of farming the common. P value, <0.01 when using Fisher's exact test. The families with a history of less than 50 years

grazing the common had a higher number of commoners who had not grazed the common.

The respondents from the interviews suggested there were often difficulties in accepting new members to graze on the commons under agreement. Generally there were negative comments and they inferred it was all about “if the face fitted,” with suggestions that a current grazier could make things very difficult for any new grazier if they so wished:

‘A new person? How do they get on with the neighbours – are the neighbours going to take well to this, they have a lot more knowledge that you have. Are they going to drive your sheep in the ferns downwards, or are they going to drive the cows where they can’t find them, we all know this happens. Then he has a lot of work. The other thing is if he hasn’t got a moor gate, then he has to put a flock of sheep or a bunch of bullocks then he has to be there twice a day to keep them in the area he wants. But he really needs to contact the local people to find the best area to go.’

As to grazing the commons with livestock in the future, a cumulative total of 31.5% (n=73) of questionnaire respondents indicated they were keen to start grazing the common in the next ten years. The remaining respondents, 23.3% said they were not considering grazing the common in the future and the majority 45.2% considered the response as not applicable. Although the questionnaire requested respondents that answered no to using grazing rights at present if they would consider grazing the common in the future, not all respondents moved between the questions as anticipated. Therefore it was unclear if those respondents not using grazing rights at present would consider grazing in the future, or if the response was from present users of grazing rights indicating they would continue to graze the commons in ten years time.

It may be suggested that 45.2% would have a significant impact on the figures, were they to have provided a definitive response Figure 12. This suggests a paucity of new grazing members over the period of agri environment agreements, and is further substantiated by the interview responses.

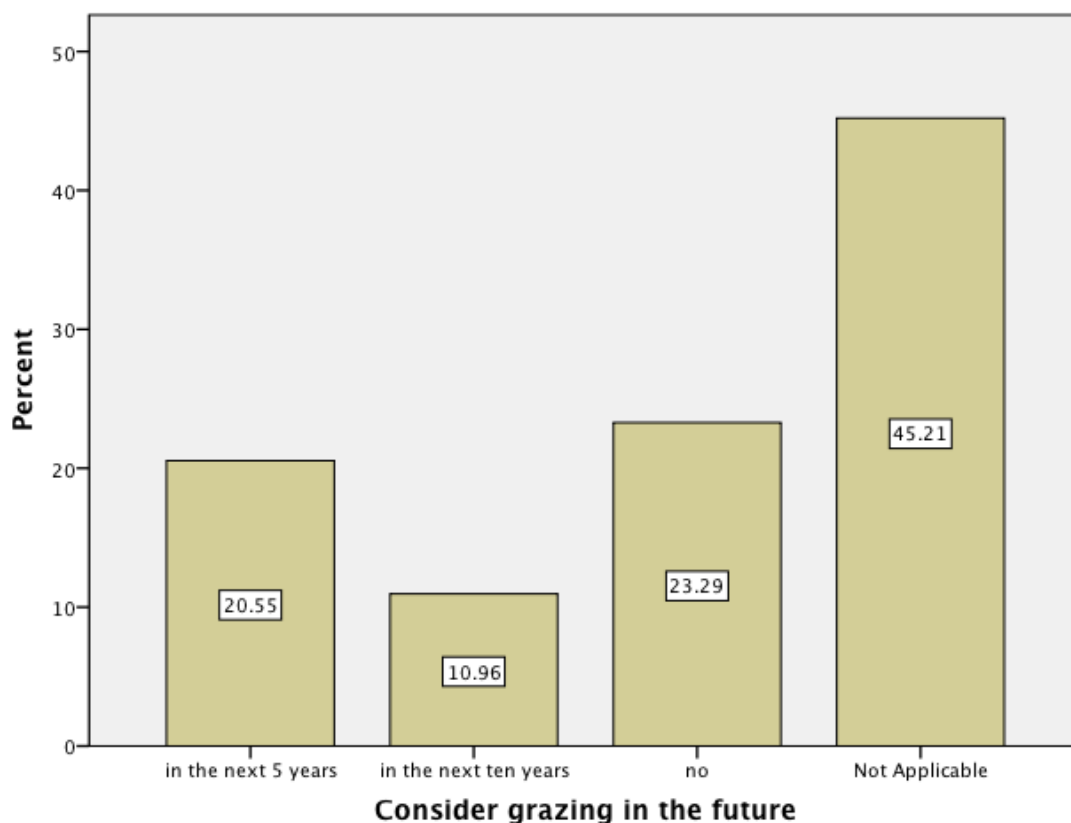


Figure 12 Bar chart displaying number of commoners who would consider grazing the common in the future

The interview data indicated the past history of the family and the relationship with Dartmoor farming through several generations being of great importance to the families. Many families recounted their family history and the in-depth knowledge of who had farmed where, going back many, even hundreds of years and links to other farms across Dartmoor. The knowledge was not just to the

Parish in which they lived, but the knowledge of the farms their predecessors have lived in and who may live there now – wherever that was across Dartmoor. The people may change but the farms don't, providing a sense of place that came across very strongly in all of the interviews undertaken. One farmer stating the farm where he was born had come up for sale and he had to buy it as it was the family home for many generations before him.

'We have been here on this place for 20 year. Only on the next door farm before that and my father was born on the next door farm from that and my great, great, great grandfather lived here before that and they were here for 200 years before that. So it came up for sale 20 years ago and we had to buy it back. We were only one farm away' (P1, 22-32).

'We descend from the Northmore that came right from this place here 9 generations back, if you follow the female line back, we come from Meavy and the Northmore's from around the 1600's' (P2, 35 – 36).

The interview respondents all had in depth knowledge of the previous generations use of the moor and how grazing of the common worked within the farm business plan. They spoke with pride of the knowledge of the moor, how their predecessors knew their way around a vast area of Dartmoor. Conversations with respondents reflected the mixed farming practices and how the grazing on the commons enabled smaller, family farms to financially support the family.

'The farm would be no good without them [Common rights], without being able to use the common. We just use it all the time.' (G6 171 – 172).

'It's the income, it's the way of life as well, they have always been used as well and the carrying capacity of the farm. If you can't use them then the animals would be on the farm all the time we wouldn't be able to cut the silage and the hay, we couldn't keep the amount of stock to make a living, if you could only keep what the farm was able to keep the farm would not be a viable unit anymore. The farm on its own, this farm standing on its own 140 acres would not be a viable unit, without the amount and type of grass you could grow here, it is not like 140 acres in

Kingsbridge, you could not keep the amount of stock to make a living, with us and four kids, we couldn't make a living, one of us would have to have a job as well as' (G6 174-182).

Evidence from the interviews indicated the grazing practices on the commons had changed over the generations, with respondents providing information as to how their parents and grand parents had used the commons in relation to the farming business. Before environmental stewardship schemes came in the practice on some commons was to bring the cattle in at night to feed and then to turn them back out onto the common to graze by day.

*'My father, we have a waste called * Waste, and he would bring the cattle in by day in the winter, feed them and then turn them out by night. Every night on his pony, he had a Dartmoor pony, he'd go up 3.30 to 4.00pm and turn them out, bring them in about 10 am with little bales and bring them in, cows would be outside the moor gate, waiting to come in, all he to do was go up and holler and shout and they would come in, let them feed all day and then go up and let them out, they would be waiting to go out' (H1 268 – 274).*

When asked about the historic grazing practices, for the majority of respondents, the question was not applicable but for those whose families had grazed the common it was for varying periods of time. Some grazed the commons in the summer only, some all year and others occasionally as it suited them and the seasons (Figure 13). The current agri-environment schemes have a set stocking calendar, combined with a requirement for the grazing livestock to graze the full extent of the common. Both factors impact upon the historic practice of out turning livestock out by day and in by night, as the livestock would gather around the moor gate waiting to come in. This practice is deemed detrimental to the habitat as there would be poaching of the area around the gateways. The over-wintering of cattle on the commons is permitted on very few of the Dartmoor

commons as the NE project officer considered the practice offered no environmental benefit.

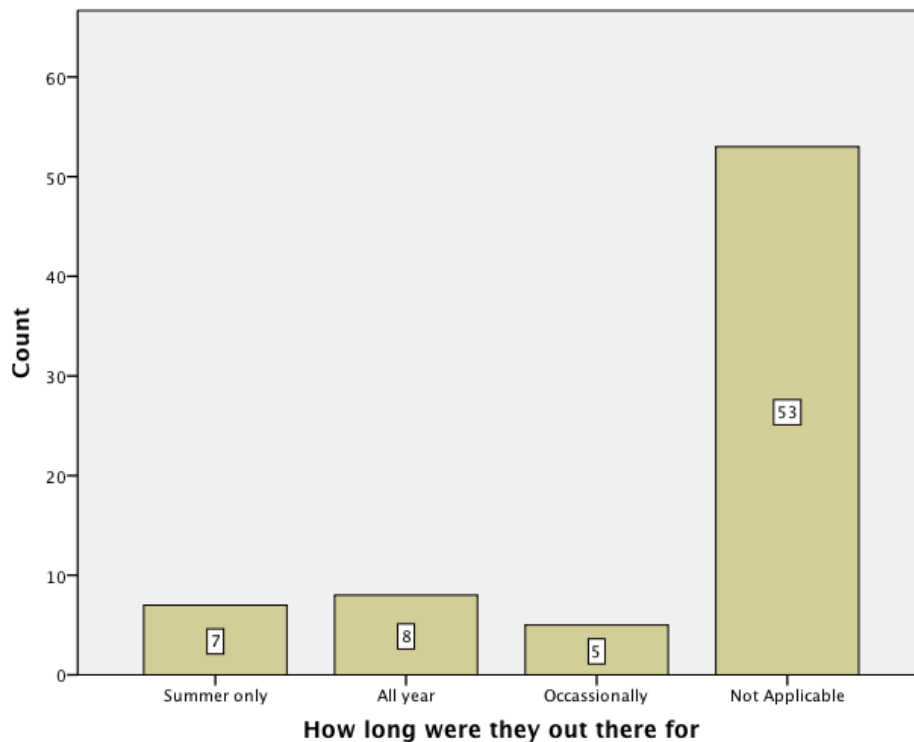


Figure 13 Bar chart displaying the period of time livestock grazed the commons during the year

The majority of respondents 84.9% stated they were the owner of the land that generated the common rights (Table 5). It is interesting with so many Duchy of Cornwall tenancies across the moor, 17 500 acres of tenanted farmland owned by the Duchy of Cornwall that there would be many more owners of land than tenants. Much of the land that generates common rights is outside of the Dartmoor National Park boundary, extending to within the South Hams in the south and the Parishes outside of the Dartmoor National Park boundary to the north. It is therefore not possible to ascertain the extent of privately owned land that has common rights attached. There is a possibility that where many farms

are both owner and tenant of different parcels of land there is a degree of pride in ticking the owner box as opposed to the tenant box.

Table 5 Position as owner, tenant or both

	Frequency	Percent
Owner	62	84.9
Tenant	5	6.8
Both	6	8.2
Total	73	100.0

Whilst this question was not always asked directly in the interview, the participants were forthcoming as to their position. There was a deep sense of pride that many respondents were the owners of the property. Observations were made within the interviews as to the difficulties of paying the rent and the link to the monies obtained via the environmental agreement not only assisting with paying the rent, but alluding to the fact that the environmental payments were drivers of the set rent for the land.

'Depends if it is a tenanted or rented farm. Every three years they want more, they never want less. If you have a mortgage it still has to be paid, if it was handed down then it would be different. You need to make the farm work for itself. Common rights are crucial' (G5 124 – 127).

Fisher's exact test was computed to ascertain if there was a significant association between the position of owner or tenant of the land that generates the common rights and whether the respondent grazed livestock on the common. Fisher's exact test demonstrated a significant association between

the position of the common rights holder, as owner or tenant and whether the rights hold grazed the common or not, P value <0.05.

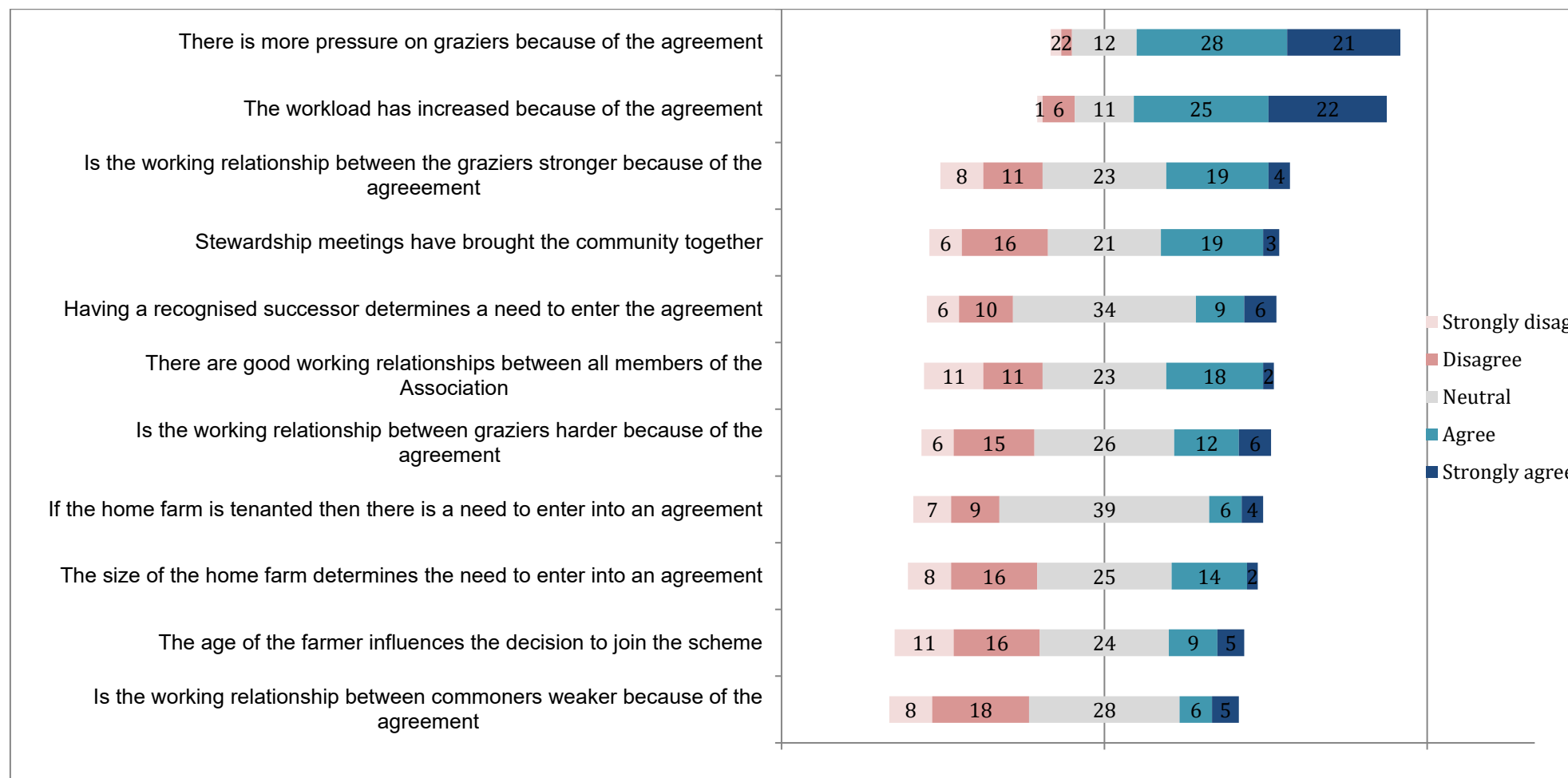
		Utilize grazing rights		Total
		yes	no	
Owner	Count	29	33	62
	Expected Count	32.3	29.7	62.0
Owner or Tenant Tenant	Count	4	1	5
	Expected Count	2.6	2.4	5.0
both	Count	5	1	6
	Expected Count	3.1	2.9	6.0
Total	Count	38	35	73
	Expected Count	38.0	35.0	73.0

Table 6 Owner or Tenant * Utilize grazing rights Cross tabulation

The cross tabulation (Table 6) indicated that the majority of respondents were owners and they were more likely not to utilise their grazing right on the common. Whereas, the small number of tenants were more likely to use their grazing rights on the common. Respondents who were both owner and tenant were more likely to use their grazing rights. It can therefore be assumed that whilst the position of owner or tenant is significantly related to the utilization of grazing rights, a slight majority of respondents were using their grazing rights (52.1%) whether they were owners, tenants or both.

The diverging stacked bar chart (Robbins 2011) indicated the responses from the Likert style questionnaire. Figure 14 visually displays the positive and negative responses to the Likert style questions. There are two types of response and therefore there are two diverging stacked bar charts.

Figure 14 Diverging stacked bar chart of Likert style questionnaire responses



There is more pressure on grazing members of the association and the work load has increased because of the agreements. The results are significant and can be viewed in both Table 7, and Figure 14.

The Chi-squared goodness of fit test was used on the Likert style responses to determine if there were any differences to the expected norm of a response. The responses were not weighted within SPSS.

Of the 18 Likert style questions, seven did not have a significant difference to the expected response. These were:

- that the working relationship between graziers is stronger because of the agreement
- the working relationship between graziers is harder because of the agreement
- stewardship meetings have brought the community together
- there is a good working relationship between all members of the association
- the age of the farmer influences the decision to join
- the size of the home farm determines the need to enter an agreement.

The Chi square goodness of fit test indicates if a response is significantly different to the expected response. It was accepted as significantly different to the anticipated response if P value is ≤ 0.05 .

Question	Disagree	Neutral	Agree	χ^2	P Value
Working relationship between graziers is stronger because of the agreement	19	29	25	2.082	.353
Working relationship between graziers is harder because of agreement	23	31	19	3.068	.216
Working relationship between commoners is weaker because of agreement	28	33	12	9.890	<0.05
Stewardship meetings have brought community together	24	26	23	.192	.909
More pressure on graziers because of agreement	4	15	54	56.740	<0.01
Work load has increased because of agreement	7	14	52	48.192	<0.01
Good working relationship between all members of the association	23	28	22	.849	.654
Age of farmer influences decision to join	30	28	15	5.452	.065
Size of the home farm determines need to enter stewardship	24	31	18	3.479	.176
If home farm is Tenanted then a need to enter agreement	16	46	11	29.452	<0.01
Having a recognised successor determines need to enter agreement	17	40	16	15.151	<0.01

Table 7 Chi square goodness of fit test for the Likert style questions

The importance of farming for the next generation, of encouraging their children to take on parts of the business was emphasised verbally by many of the respondents. Although it was not considered that the next generation had such a great knowledge of the moor as their parents or grandparents had.

'The next generation does not know as much as we do, only through gathering sheep and checking sheep. And going up there checking stock. The eldest was never interested unless she did go up and gather sheep, she wouldn't know. The next one would know a bit more than she does in bye farming. The next one would know more about it.'

A cross tabulation and Chi square analysis was undertaken using the main factor as the recognition of having a successor to the business. The summary of questions is in Table 8 and the Chi square analysis results are presented in Table 9. Where the Pearson's Chi square analysis assumption was violated, Fisher's exact test was used, as this was considered appropriate.

Full question	Summarised question
The working relationship between graziers is stronger because of the agreement	Work relationship graziers is stronger
The working relationship between graziers is harder because of the agreement	Work relationship graziers is harder
The working relationship between commoners is weaker because of the agreement	Work relationship commoners weaker
The stewardship agreements have brought the community together	Agreements community together
There is more pressure on graziers because of the agreement	More pressure graziers
The work load has increased because of the agreement	Work increased
There is a good working relationship between all members of the association	Good working relationship association
The age of the farmer influences the decision to join the scheme	Age of farmer
The size of the home farm determines the need to enter into the agreement	Size of home farm
If the home farm is tenanted then there is a need to enter the agreement	Home farm tenanted
Having a recognised successor determines the need to enter into the agreement	Recognised successor

Table 8 Likert question summary

Question	χ^2	P Value
Work relationship graziers is stronger	Fisher's 11.856	<0.05
Work relationship graziers is harder	Fisher's 2.827	.0103
Work relationship commoners weaker	Fisher's 11.296	0.081
Agreements community together	Pearson $\chi^2_{(4)}$ 11.369	<0.05
More pressure graziers	Fisher's 2.328	0.403
Work increased	Fisher's 2.154	0.385
Good working relationship association	Fisher's 11.270	<0.001
Age of farmer	Fisher's 3.558	0.385
Size of home farm	Fisher's 11.390	<0.001
Home farm tenanted	Fisher's 26.926	<0.05

Table 9 Cross tabulation results for 'having a recognised successor'

Five of the cross tabulations indicated a significant relationship. These have been emboldened within Table 9.

Whilst there is a positive relationship between 'having a recognised successor determines the need to enter agri-environment schemes' and the 'working relationship between graziers being stronger because of the agreement', the significant association is difficult to interpret, P Value <0.05. The cross tabulation (Table 10) indicated that more respondents than expected disagreed with both the statements under review.

			working relationship between graziers is stronger because of agreement			Total
			Disagree	Neutral	Agree	
Having recognised successor determines to enter agreement	Disagree	Count	7	4	6	17
		Expected Count	4.4	6.8	5.8	17.0
	Neutral	Count	12	18	10	40
		Expected Count	10.4	15.9	13.7	40.0
	Agree	Count	0	7	9	16
		Expected Count	4.2	6.4	5.5	16.0
	Total	Count	19	29	25	73
		Expected Count	19.0	29.0	25.0	73.0

Table 10 Having recognised successor determines to enter agreement * working relationship between graziers is stronger because of agreement Cross tabulation

The majority of respondents were neutral in their response to both statements of 'having a recognized successor determines the need to enter agri-environment schemes' and the 'stewardship meetings having brought the community together.' There was a significant relationship between the two responses the Pearson Chi square analysis was $\chi^2_{(4)} 11.369$, P Value <0.05. The cross tabulation in Table 11 indicate the majority of respondents were relatively neutral in their response.

			Stewardship meetings have brought community together			Total
			Disagree	Neutral	Agree	
Having recognised successor determines to enter agreement	Disagree	Count	9	5	3	17
		Expected	5.6	6.1	5.4	17.0
	Neutral	Count	10	19	11	40
		Expected	13.2	14.2	12.6	40.0
	Agree	Count	5	2	9	16
		Expected	5.3	5.7	5.0	16.0
	Total	Count	24	26	23	73
		Expected	24.0	26.0	23.0	73.0

Table 11 Having recognised successor determines to enter agreement * stewardship meetings have brought community together Cross tabulation

There was a significant relationship between 'having a recognized successor determines the need to enter an agreement' and 'there is a good working relationship between all members of the association' P Value <0.001.

The majority of respondents were neutral in their response to both the statements (Table 12).

			Good working relationship between all members of the association			Total
			Disagree	Neutral	Agree	
Having recognised successor determines to enter agreement	Disagree	Count	10	4	3	17
		Expected	5.4	6.5	5.1	17.0
	Neutral	Count	12	17	11	40
		Expected	12.6	15.3	12.1	40.0
	Agree	Count	1	7	8	16
		Expected	5.0	6.1	4.8	16.0
	Total	Count	23	28	22	73
		Expected	23.0	28.0	22.0	73.0

Table 12 Having recognised successor determines to enter agreement * good working relationship between all members of the association Cross tabulation

There was a significant association with 'having a recognized successor determines the need to enter agri-environment schemes' and that 'the size of the home farm determines scheme participation,' Fisher's exact test P Value <0.01. Once again the majority of respondents were neutral in their response to both statements (Table 13).

			Size of the home farm determines need to enter stewardship			Total
			Disagree	Neutral	Agree	
Having recognised successor determines to enter agreement	Disagree	Count	10	6	1	17
		Expected Count	5.6	7.2	4.2	17.0
	Neutral	Count	11	20	9	40
		Expected Count	13.2	17.0	9.9	40.0
	Agree	Count	3	5	8	16
		Expected Count	5.3	6.8	3.9	16.0
	Count		24	31	18	73
	Expected Count		24.0	31.0	18.0	73.0

Table 13 Having recognised successor determines to enter agreement * Size of the home farm determines need to enter stewardship Cross tabulation

There was a significant relationship between the question 'if the home farm was tenanted then there was a need to enter an agreement' and 'having a recognized successor determines the need to enter an agreement' Fisher's exact test P Value <0.05. Considering the majority of respondents did not occupy tenanted farms 6.8% (n=73) it may be possible to suggest that whether the farm is tenanted or owned it is not a determinant factor to enter into an agri-environment agreement.

A significant majority of respondents were neutral in their consideration that having a recognised successor determines the need to enter into an agri-environment agreement. This may in part be due to a Central Tendency Bias in the responses.

In conclusion, the persons who disagreed with 'having a recognized successor determines the need to enter an agreement' were significantly likely to disagree with the following statements:

'Working relationship between the graziers is stronger because of the agreement',

'The agreements have brought the community together',

'There is a good working relationship within the association because of the agreement'.

In summary, there is a definite pattern within the responses. It does not appear to be a specific type of response bias. It may be considered the underlying issue, is more to do with having a recognised successor as not being a determinant factor when considering agri-environment schemes on commons. Because one commoner's decision has such a significant impact on the group decision, personal issues such as successor may not appear relevant.

The families that had farmed in the area for an excess of 50 years were more likely to graze livestock on the common under the present scheme. The majority of respondents who grazed livestock on the commons under the current schemes had grazed the commons for in excess of 31 years, with a minority having grazed for less than this time. The significant association between the position of owner, tenant or both was complicated because of the fact that the majority of respondents were both owner and tenant of land generating common rights and it was not possible to suggest it was either owner or tenant that was a more significant factor.

4.3 Why do Dartmoor farmers enter agri-environment schemes?

When asked from a list of possibilities: environmental, financial, coerced, encouraged and forced, why the respondents thought the commons' association entered into the scheme, 37.3% (n=73) considered the reasons were environmental, 89.3% financial, 18.7% coerced, 26.7% encouraged and 22.7% forced (n=73) (Figure 15). Whilst this question did not ask why the individual person entered into the environmental agreement, it must be remembered that the schemes available were for group applications only and not for individual participants. Within the interview data, individuals were asked their reasons for joining the scheme or not as the case may be. One respondent explained how financially beneficial past schemes had been and how they had changed their farm business plans to incorporate the scheme, with the intention of coming out of the scheme at the end of the ten year period. However, a new scheme was introduced, which has proved more difficult to adhere to business wise and was not as financially lucrative. The new scheme had not enabled them to adapt current farm business plans to best advantage.

'Ten year scheme we will cut the stock, we will take the money, if in ten years they all [children] want to come in, the schemes finish, we can do something different. Our intention was at the end of the ESA we didn't know there would be another scheme: our intention was, we were going to graze to our full potential at the end of the scheme, and then this other scheme comes in' (A6 62 – 67).

Those who were involved in the negotiations for entry into the scheme spoke of the wider benefits to the community.

'My thought all the way has been, there is all this money, £100k coming in onto this common per year, surely that must be good thing with that much money coming into this area, if there are not too many strings attached, it is a social subsidy, it helps everybody on the common. That was my

thought for ESA, if every farming family can get some money off it, it helps those families survive on the common and that was the main reason for me encouraging it' (A6 95 – 101).

Some concerns were raised as to the restrictiveness of the agreements and such statements as *'We cannot farm how we want to so they are going to have to pay us,'*

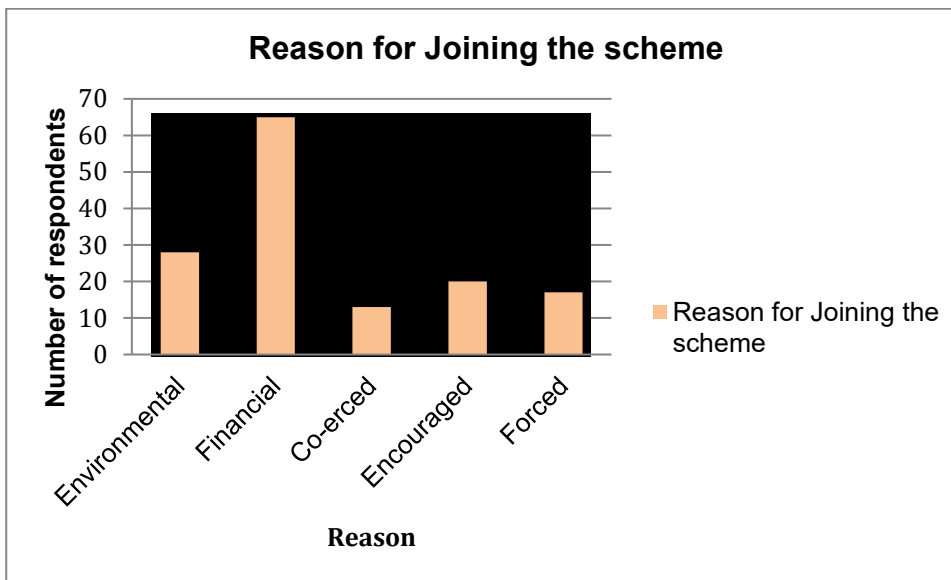


Figure 15 Reasons for joining the schemes

Trying to find a balanced view of commoners and the schemes was difficult. The majority of the respondents had negative views of the commons enrolment into any environmental agreement. A strong influence was the financial security afforded by a ten-year scheme.

'The payment came back a second time to about £34k, it would be a bit silly not to pick up 34k. You don't want to cut off your nose to spite your face' (A6 22 -23).

The cross tabulation of using grazing rights and if the reason for entering an agri-environment scheme was because the respondent considered they were forced. Of the respondents that used their grazing rights, 13 out of 30 stated

they considered they were forced, compared to four respondents who did not use their common rights out of 35 who did not consider they were forced into an agri-environment. There is a significant relationship within this cross tabulation, Pearson's Chi square;

$$\chi^2_{(1)} = 5.293, P < 0.05$$

It may be suggested that there is a strong possibility that graziers do consider they are forced into an agreement, whereas non graziers do not consider they are forced into an agreement. Whilst this may not be a majority of graziers with this view, it is a factor that has become more prominent throughout the results analysis.

Only 24.7% (n=73) of respondents indicated that finances did not influence their decision to join.

There was no significant relationship between the use of grazing rights on the common and the payment influencing their decision to join the scheme.

However, there was a significant association between the payment influencing the decision to join an agri-environment scheme and the benefit to the business of an agri-environment scheme, Fisher's exact test P Value <0.01. The majority of respondents, 44, agreed with both statements. The statements from the interview respondents had a lot to say about the subject of the payments, their distribution amongst the membership and the benefits of the money.

'When all that money is on the table with three farmers, to get an agreement you need to shoot two' (A5 93 – 95).

'From a point of view of a member of the scheme, you are earning money that you would not have other wise. I really don't think the farmers, graziers in particular and the non graziers for that matter, the people that are non graziers did not put their stock on the common, do not put stock on the common anyway, so they are getting a financial benefit for doing something they would not do anyway' (A4 7 – 12).

Whereas some grazing commoners suggested they were not driven by the financial security and indicated that would have preferred to have grazed the common to their full rights potential, but also understood the implications that this would have on the other graziers on the common in that it would have reduced their ability to graze up to the allocated numbers under a scheme to virtually nothing.

'On this farm if they were to turn around to me and say right you don't want to go into this scheme you can turn up your full potential of stock if you wish and we will work around you, we will go ahead, the problem being because they put such a small stocking density on the common, if I was to turn up my full potential for sheep and cattle there wouldn't be a heck of a lot of room for anyone else at all' (A4 61 – 65).

In summary,

- The majority of Dartmoor farmers enter into stewardship agreements because of the financial incentive offered through the schemes to deliver the objectives.
- The Dartmoor farmers also recognise the advantages of benefits to the community, recognising that if they, as an individual say no, then it will impact on all the members of the association and the impact of a lot of money not entering the local economy.
- The benefit of financial security of the scheme, with a guaranteed regular payment for a ten year period was a contributory factor to scheme participation.
- The Dartmoor farmer considers the agreements do benefit the farm business.
- There is a significant relationship between the position of using grazing rights and the consideration that the respondents felt forced into an agri-environment scheme.

4.4 What are the impacts of being in a scheme?

There was a significant impact on the workload of the grazing commoner because of the agri-environment scheme, Chi square goodness of fit, P value <0.01. The pressure put upon grazing commoners had also increased as they worked to deliver the outcomes requested by the agri-environment scheme, Fisher's exact test P value <0.001. The majority of respondents, 71.2% agreed with the statement that the workload had increased because of the agreement (Figure 16). However there was not a positive relationship within the

questionnaire data as to those that grazed the common and the view that the workload had increased.

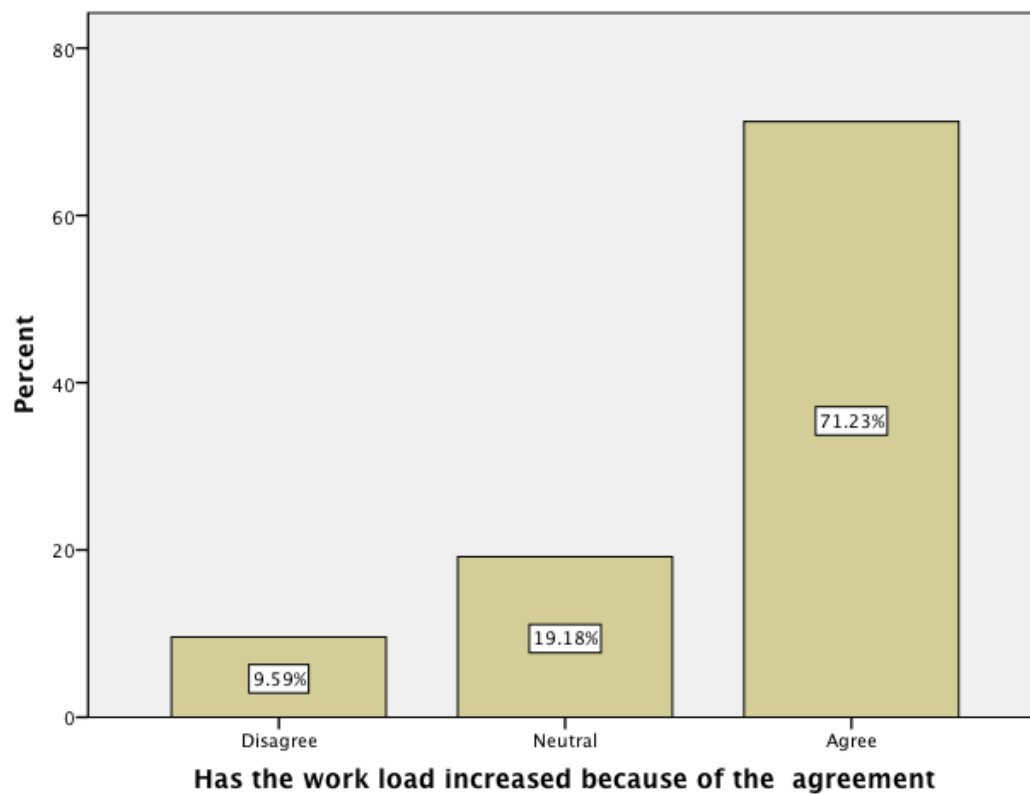


Figure 16 Bar chart indicating the response to the increase in the work load because of the agreement

When looking at the overall working relationship within the commoners association, there was a significant relationship between the 'working relationship between the graziers is stronger because of the agreement' and 'for the association members to work together', Fisher's exact test, P value <0.05.

			For association members to work together			Total
			Very difficult	Neutral	Easy	
Working relationship between graziers is stronger because of agreement	Disagree	Count	14	4	1	19
		Expected	8.3	8.3	2.3	19.0
	Neutral	Count	10	13	6	29
		Expected	12.7	12.7	3.6	29.0
	Agree	Count	8	15	2	25
		Expected	11.0	11.0	3.1	25.0
	Total	Count	32	32	9	73
		Expected	32.0	32.0	9.0	73.0

Table 14 working relationship between graziers is stronger because of agreement * For association members to work together. Cross tabulation

The cross tabulation (Table 14) indicated the difficulty in ascertaining precisely what the significant relationship actually was. It was assumed that where more respondents were neutral regarding the consideration of the difficulties around the group working together, but agreed that the working relationship between graziers was stronger.

There were three direct questions asked within the questionnaire as to the impacts of the scheme. These questions were cross-tabulated with the use of grazing rights.

Cross tabulation		Fisher's exact test P Value
Do you use your grazing right on the common?	Does the Environmental Scheme benefit your business?	0.102
	Does membership of the Environmental Scheme affect your future business plans?	0.001
	Does membership of the Environmental Scheme on the Common impact on how you may have utilised the Commons?	0.000

Table 15 Cross tabulation of using grazing rights and impacts of the scheme

When the cross tabulation and Chi square calculated (Table 15) there was a significant relationship between the use of grazing rights and the membership of the scheme affecting future business plans, Fishers exact test, P value <0.001. The cross tabulation suggested that where the majority used their grazing rights (27) they were more likely to say that the membership of the scheme did impact on their future business plans. In contrast to the respondents who did not use their right to graze (25) who were more likely to agree that the membership of the scheme did not impact on their future business plans.

There was also a significant association with the use of grazing rights and if membership of the environmental scheme on the common impacts on how the they had used the commons, Fishers exact test, P value <0.001. The majority of respondents who used their right to graze agreed with the statement that membership of the agri-environment scheme did impact on how they used the

common. Whereas the respondents who did not use their grazing rights were more inclined to disagree with the statement on membership of an agri-environment scheme impacting on how they may have used the common. Obviously, those who do not graze the common will not be impacted on how they use the common as the internal deed and contract of the agri-environment scheme will restrict use.

The grazing respondents talked widely of the impacts the environmental scheme had on their businesses, their relationships within the community and their use of the common. Many spoke of the difficulties the scheme negotiations has caused within their communities. Common rights holders with a large number of rights had a greater share of the money and as the division of the funds was at the discretion of the Commoners' Association, this was considered a route cause of many of the problems. This is correlated further with the statements provided within the interviews, where many members of the Associations considered that negotiations for the agreements had driven the community apart.

'So this actually does come back to the thing you mentioned to start with, it does break up communities, yes it does' (P6 66 – 68).

The difficulties of community relationships associated with the environmental stewardship agreements is further emphasized with the results from the cross tabulation of stewardship meetings having brought the community together and the difficulties for association members to work together. Fisher's exact test $P < 0.01$ with significantly more respondents disagreeing that the stewardship

meetings have brought the community together and stating that it was very difficult for association members to work together.

'I think it is inevitable because there is a pot of money that is given – paid to the Association and the Association has to decide how it is split. But there are guidelines that help us make that split and I am afraid that it it inevitable it will help to cause friction. But there are other causes of friction within the community like the business of lears and whose stock is where and those problems will exist whether there is money or not in the schemes' (I4 101 -108).

Getting the association into an environmental agreement was significantly difficult, P value <0.01. 37 respondents (51%) agreed with the statement that it was very difficult getting the association into an agri-environment scheme (Figure 17).

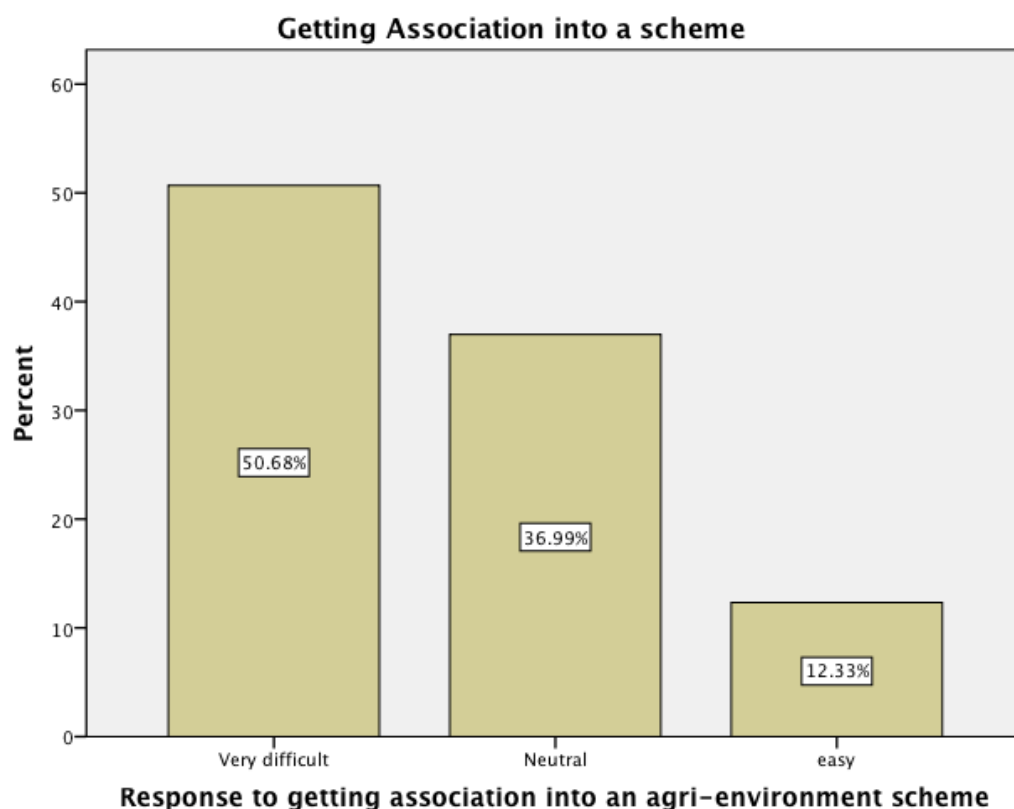


Figure 17 Getting the association in to the scheme

Table 16 and Figure 18 illustrate the following factors had a greater number of respondents agreeing that the following statements were significantly very difficult:

- Getting association members into the scheme.
- Determining the financial payment distribution.
- Determining the grazing allocation.

The majority of respondents (52%) were not aware of any difficulty in finalising the internal deed. This may well be due the fact that in most circumstances it was only members of the commoners association committee that were responsible for negotiating the internal deed and many of the ordinary members would have signed the final document.

	Very difficult	Neutral	Easy		
Getting Association into a scheme	37	27	9	16.548	<0.01
For association members to work together	32	32	9	14.493	<0.01
Determining financial payment distribution	39	18	16	13.342	<0.01
Determining grazing allocation	44	23	6	29.781	<0.01
Finalising internal deed	26	38	9	17.452	<0.01
Negotiations with project officer	20	40	13	16.137	<0.01
Negotiations with facilitator	15	47	11	32.00	<0.01

Table 16 Chi Goodness of Fit test results for Likert data

The grazing commoners had made significant changes to the numbers of livestock grazed on the common during the years of agri-environment scheme.

Some indicated that it was just too much trouble to continue grazing on the common or that the reduction in numbers permitted were untenable.

‘We went from putting 70 cows to putting out virtually nothing at all, we could put out seven yearlings, so it wasn’t worth it’ (G6 114 – 115).

The results indicated there had been a change in the breeds of livestock used to graze on the commons over the years of environmental agreements and subsequent grazing management. Many commons graziers indicated that they kept more of a hill type cow generally a native breed that could stay out all year and withstand the harsh conditions with a little feed supplement, but various factors had resulted in changes to the type of cow kept. Instead a cow that produced a cross bred calf and would be more profitable was the choice for many with the reduction in numbers permitted to graze.

‘we kept hill cows up until 2011 and we had the maximum number. We got rid of them and instead of keeping anything like that we went limousin, right or wrong. It worked for us, it wouldn’t work for everybody’ (I1 501 – 504).

The data indicated that 24.7% of respondents grazed native breeds on the commons at present, a reduction from the 27.4% of all respondents having native breeds ten years ago of which 20.5% were registered with the breed societies. There was a native breed at risk supplement available on common land under early HLS Agreements, but this was no longer payable on common land from 2013 onwards (Gov.UK, 2015). The majority of respondents, 47.9% considered the native breeds at risk supplement to be a useful supplement.

A goodness of fit Chi square analysis indicated that there was a positive association between grazing native breeds at the present time and the membership of the relevant breed society $\chi^2_{(2)} = 50.373$, $P < 0.001$. Of the 18 respondents who indicated they kept pedigree native breeds on the common, 17 of them keepers had the pedigree livestock registered with the relevant breed society. Those who keep native breeds on the common consider it to be a useful supplement, P Value < 0.001 .

The removal of the native breeds at risk supplement could impact on the number of native breeds kept on common land and the overall number of native breeds on the breed society registers.

Respondents, on a number of occasions referred to the social impacts of environmental stewardship. From the difficulties with negotiating the payment schedule or the stocking requirements as allocated between the grazing members of the Association. The social impacts are complex and not all what could be considered as such were raised. But the social cohesion among the farming community had been directly affected by the environmental stewardship agreements. One commoner described what they felt as serious difficulties associated with negotiating an agreement and felt threatened during the process and was worried that someone would set fire to the barn as recrimination.

The difficulties associated with the setting up of the agreements were well documented in the interview data and was substantiated by the Likert data. Finalising the financial distribution of the agreement and determining the grazing

allocation of the agreement were significantly associated. Both factors were considered very difficult tasks, Fisher's exact test, P value <0.01.

Several respondents talked of the negative impact on the working relationship with their neighbours. Some had historically worked together, during hay harvest or sharing machinery, but now felt the working relationship to be untenable, due to the discussions during the agreement negotiation process.

'Farmers are all individuals this is what the powers that be do not understand, they don't like it, they cannot put us in a box, we are all complete individuals, yes somewhere, some are horrendously greedy, others are very meek and mild and get walked over, but we are all very different. We are not like all the miners together all working together in the same way, we are not like that, that is why we are farming, because we don't like fellow man, because we prefer to work in isolation. That is what it is' (I4 72 – 78).

'We got on with everybody, we were friends for 30 years and we fell out over who was going to graze what stock and who was going to get what money, to me I think that is a bad thing on Dartmoor because everybody relies on good neighbours' (A4 79 – 82).

There was a very significant relationship between stewardship meetings bringing the community together and the working relationship between the graziers is stronger because of the agreement. A significantly greater number of respondents than anticipated disagreed with both of the statements (14 actual vs 6.2 expected) whereas only one respondent agreed to both statements as opposed to the six expected. Suggesting a negative relationship between the consideration of stewardship meetings having brought the community together and a stronger working relationship with the graziers. This is further evidenced by the interview responses, highlighting the difficulties of groups of commoners getting on and working together successfully without any animosity.

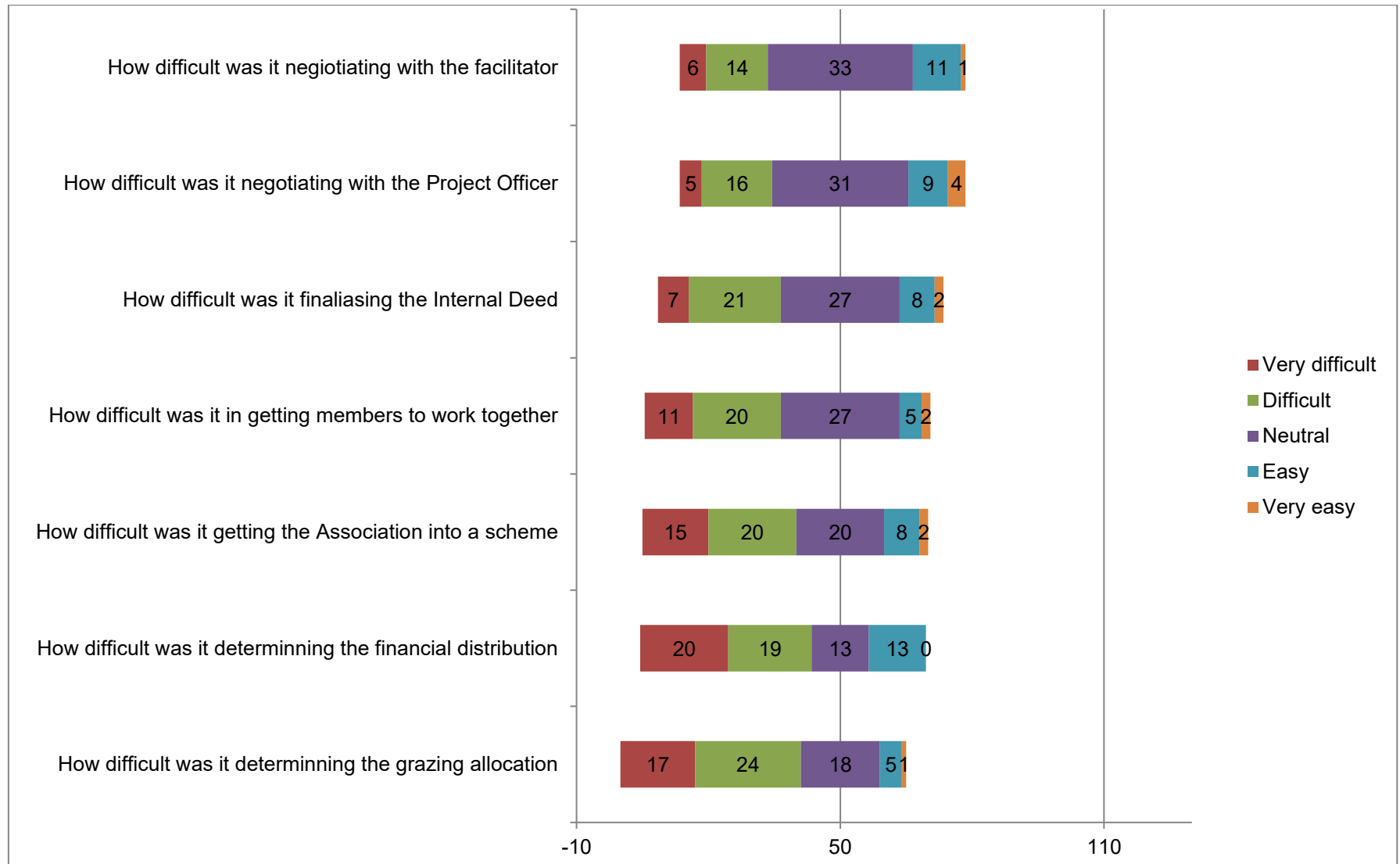


Figure 18 Second diverging stacked bar chart of Likert question responses

In summary there are a great deal of impacts upon the individual farmer and the neighbourhood because of agri-environment scheme enrolment on common land.

- The workload of the grazing commoner has increased significantly with being enrolled in an agri-environment scheme.
- The pressure on the grazing commoner has increased because of enrolment within an agri-environment scheme on the common.
- There is a significant relationship between the use of common rights for grazing and the effect on future business plans.
- It is well documented that the negotiation process has driven the community surrounding the commons apart. The agri-environment schemes have not brought the community together and it is accepted that it is very difficult for commoners within an association to work together. There were also difficulties in the negotiation process and getting associations into agri-environment scheme was very difficult.
- There was a significant relationship to those who kept native breeds and their registration with the relevant breed society.

Chapter Five Discussion

5.1 Aims of the research

The aims of this research project were to assess the factors affecting participation in agri-environment schemes from a Dartmoor Commons perspective. Also, to consider the implications for the group agri-environment schemes involving large numbers of individual participants. The majority of the Dartmoor Commons are enrolled in HLS and UELS schemes, and each agreement has a requirement to include the significant majority of common rights holders. Should a commoner with many common rights refuse to enter into an agri-environment scheme, the decision will impact on the other commoners. Because of the subsequent impact, the study reviewed the social implications that agri-environment schemes had on the community and the potential unrecorded issues associated with group schemes. Both questionnaire data and interview data were combined to provide a unique insight into agri-environment schemes on the Dartmoor Commons.

The main findings of the research were the respondent's opinion of the current agri-environmental schemes on the common.

- The regularity of the payment generated by enrollment in an agri-environment scheme was beneficial not only to the participant but was beneficial to the whole community.
- Respondents considered the current agri-environment schemes were seen as inflexible; with no opportunities to amend their farming systems for the period of

the agreement or to change the grazing requirement within the scheme according to the seasons.

- One commoner's decision had a significant impact on all the other commoners. A commoner with a significant number of rights could jeopardise an agreement.
- The agri-environment scheme had put commoner against commoner and had impacted on the social relationships of a community.
- Many commoners considered the agri-environment schemes limited opportunities for new entrants. No opportunities for a new entrant to try grazing livestock on the commons, without there being a full agreement commitment.
- Commoners, who had grazed the commons more than 30 years ago, were more likely to be still grazing livestock on the common.
- The workload of the commoner had increased as a result of the agri-environment scheme. However, the working relationship between the commoners that grazed livestock on the common was stronger.
- The commoners' spoke of the importance of a sense of place, their family's history and association with the landscape, taking great pride in the landscape and the livestock.

5.2 Scheme Factors

Dartmoor commoners enter into agri-environment schemes because of the financial incentives offered by the agri-environment schemes. The Dartmoor commoners welcomed the security of payment from the agri-environment scheme. The findings of this research concurred with the extensive research highlighting the importance of the regularity of the agri-environment payments

and stated that this factor may take precedent over the scheme duration as a determinant factor for scheme participation (Brotherton, 1991; Wilson and Hart, 2000). A non-grazing commoner, when interviewed, referred to the payment as '*money for doing nothing*' and money he would not have otherwise had, just for having a grazing right on the common. Many respondents saw a future ahead of them of a continuation of agri-environment agreements. Having seen the previous succession of schemes, with no choice for the Commons not to be in a scheme. The commoners considered the agri-environment schemes on the commons were a method to control the stocking rate on the commons as much as protecting the environment. However, some respondents believed that the control of grazing had gone too far and that there was a risk of losing the ability and knowledge of grazing livestock on the commons.

Any irregularity in the payments can be detrimental to the farming business and can impact on the trust between the agreement holders (Mills, 2012). Regular payments were crucial to the overall success of the agreements. Missed payments were detrimental to the confidence between the delivery body and the agreement holder. The relationship between the agreement holders and the project officer is often long term, extending from one scheme, through a period of ten years and into the next scheme. The project officers play a pivotal role in the negotiation process and the scheme management. Trust is an important factor in successful agri-environment agreements.

As with previous research, the period of the schemes was not a major factor in determining scheme entry (Wilson, 1997). However, it must be taken into

account that for Dartmoor commoners, the choice of participation within an agri-environmental scheme is a group decision, not an individual decision. Therefore the results for the duration of the scheme may not be as relevant in this study compared to previous research.

The results indicated respondents joined for the environmental benefits that the agri-environment schemes brought. However, respondents stated the measurements of success within the agri-environment schemes were not easy to understand. The measures of success were considered important to the Dartmoor farmers; many of them take pride in being good farmers; having knowledge of the richness and diversity of the species found 'on their patch' (McCracken et al., 2015). The Dartmoor Commoners considered they knew what was on their farm and the common some recounted the loss of certain bird species since the start of agri-environment schemes. The Commoners perception of the richness in species is reflected in previous research (Ahnstrom et al., 2008). The indicators of success as stated in the agreement were often not entirely achievable within the ten years of the scheme. As one commoner said, the knowledge of what was expected of them was unknown.

'You were saying how the commoner or farmer doesn't necessarily understand all of the numbers on the table – it is also to do with they don't understand why is part of it, they know Natural England have these environmental things but they don't really know what they are for, they don't know what they are looking for, they don't know the pros and cons of having sheep or cattle or ponies up there and I also think that is the main part of the problem, because they are never told this they are just told that this is what's happening and then understand why Natural England want less sheep and more cattle and so that causes dispute but actually if they knew why, they may not accept it, but they knew why, it might help matters. Because it is just another element they do not know' (AP 21 – 28).

The measurement criteria used by Natural England to gauge the habitat regeneration was considered to be inappropriate for Dartmoor. Commoners thought there was little communication of the successes achieved. Those farmers who graze the commons often found the classification of their common disappointing in that indicator of success may not be realised over the ten plus years in the agri-environment scheme. Interestingly, a conservation project run on Langholm Moor had four specific, measurable objectives put in place to overcome a set of precise problems. Part of the issue was the loss of grouse chicks to raptors, including hen harriers. The success criteria included the number of breeding hen harriers and the economic viability of the grouse shooting. This was a scheme that did not just measure the environmental success, but the economic success alongside, which may be considered as a positive way forward for all agri-environment schemes (Baynes, 2016).

Shared values are recognised as a key factor in influencing environmental outcomes. Shared values refer to whether organisational bodies and individuals identified the same set of values as the participants to a scheme (Ahnstrom et al., 2008; Ingram et al., 2013). The commoners reiterated the importance of trust with the organisational bodies, of recognising that they as the scheme partners have the same values as the farmer. Farmers are custodians of the land, the Dartmoor farming families have occupied the same land in many cases for hundreds of years, it is that deep sense of pride and a sense of belonging that creates a protective attitude towards the place. There is a strong desire among the Dartmoor commoners to permit the continuation of commoning on their farm, for them not to be the generation that ceases a

tradition (Ingram et al., 2013). When an advisor comes in with ideas as to how it should look, it is not surprising that there is some animosity. There is some research that discusses the need to educate farmers in understanding why certain things are done for environmental gain (Lobley et al., 2013). However, the thoughts are not reciprocated, and the farmers may do certain things at a particular time of the year for a reason, and there should be an understanding of the needs of both parties, with a degree of compromise.

The rigidity of the schemes was considered by many of the Dartmoor farmers to be detrimental in that there was no scope for a change. As with many agricultural commodities, there are peaks and troughs in the marketplace. Historically farms on Dartmoor were predominantly mixed livestock farms, keeping cattle and sheep and perhaps ponies. The restrictive nature of the agri-environment schemes has resulted in the maintenance of individual numbers of livestock for grazing the commons at certain times of the year as per the HLS contract. Many of the Dartmoor farmers found this unhelpful with unpredictable weather and subsequent herbage availability. Once again, a degree of flexibility and an understanding of the welfare needs of the livestock would be beneficial to the commoner and improve the working relationship with the organisational body.

The Dartmoor commoner as an agri-environment agreement holder is aware of the agri-environment scheme the common is enrolled in. However, the knowledge of the options within the scheme is not well known amongst the Dartmoor commoners. There is not a good level of understanding as to what the

measurable objectives are for the agreement, as to what habitats and species are desirable on the commons. Many respondents conveyed their frustration as to the misunderstanding of what 'good' looks like on a common. This may be an opportunity to train the farmers to understand what is beneficial and to recognise what success looks like and to celebrate the achievements.

Dartmoor farmers expressed their concerns about not being listened to and their values and knowledge not being taken into account during the scheme negotiation and followed through with their views not being listened to during the running of the scheme. A degree of misunderstanding on both sides of the agreement and a lack of communication could be to blame. Similar issues were recognised in agri-environment schemes in Australia, where it was identified farmers lacked the knowledge of the impact of grazing practices on the biodiversity (Wilson, 1997; Wynn et al., 2001), if there is no clear understanding of how grazing impacts on the biodiversity then changing the pattern of grazing will be very difficult.

As far as scheme factors are concerned, there is an overwhelming need for better communication and a degree of understanding from both parties as to why an individual task is undertaken and the impact of the job. There is a requirement for all parties to have a mutual appreciation of the knowledge each party holds. There is also a requirement to understand and recognise success. If the schemes were started with baseline data for the area on day one of the agreement, and then improvements were measured from that point forward, improvements or failures would be understandable by all parties. Payment for

results may be considered as a way forward, Dijk et al. (2015) refer to an environmental scheme in the Netherlands with the payments made for the results obtained. In this case, for the number of birds' nests and the successful management of ditch banks.

For national policy, there would be a benefit to the measurement of success or failure of an agri-environment scheme. As far as using public money for public goods is concerned, a method of recording the gains or losses is important. Therefore, the baseline data, while considered too costly and too time-consuming to undertake, must surely be imperative (Carey et al., 2003). As without this information, how can the accurate assessment of what is required to service the habitat be made? The baseline data collected should be site specific, with a more precise targeting of agri-environment prescriptions that were not necessarily national objectives resulting in a more accurate method of providing accountability of public funds.

5.3 Time period

The ten-year schemes on Dartmoor are considered a constraining factor to new grazing members, some commons' association schemes accepting no new grazing members for the duration of the schemes. Dartmoor commoners highlighted the difficulties associated with the scheme negotiations. Once the negotiations had been completed, there was a tendency to leave the agreement alone, as the discussion had caused so much anxiety amongst the members. The ten-year schemes were, therefore, preventing new members from considering grazing livestock on the common.

The duration of the schemes is not a determinant factor to scheme participation for Dartmoor farmers. However, the period of ten years was considered by some farmers to be too long because of the unpredicted changes that often occur within a business over a period. Ten years before this study the farming community had undergone a great deal of both anticipated and unexpected change. Some commoners commented on what choice the older farmers had in participating in a ten-year agri-environment scheme. It may close the door to retirement during the ten-year period, or be seen as the ideal pension pot for a ten-year period. This study recognised the impact of one commoner's decision on another commoner, the choice to join a ten-year agri-environment scheme at the age when some commoners may consider retiring from active farming, is not a natural choice. This is where a short-term scheme – of five years, would be beneficial. This would provide an opportunity for the changes in grazing livestock and the commoners' choice to graze. It must be recognised that many internal agreements do have clauses whereby an individual may make an amendment to the position of grazier or non-grazier with notice, but may not apply to all agreements.

While the period of the schemes was considered imperative from an environmental perspective, recognising that the improvements to a habitat would take more than ten years to achieve, this does not reflect on any interim benefits that may be attained. Therefore how success is measured is a vital question. At present, agri-environment schemes are assessed on short-term targets, with indicators of success written into the agri-environment agreements.

There are over-arching targets of success, including bio-diversity 2020, that assist with setting of the criteria. It would be beneficial to the environment to ensure there is scope within national policy for short-term schemes, as with the Catchment Sensitive Farming approach. The success of the CSF scheme is well documented (Catchment Sensitive Farming, 2014) with measurable achievements, and participants can see how they have made a difference to the overall landscape scale scheme. Individuals participated in the CSF scheme, but the achieved outcomes were on much larger scale than just one farm. Individual participants could take the option of participation or not, and their decision did not directly impact upon their fellow farmers.

5.4 Group schemes

Dartmoor commoners recognised the impact of their decision to enter into an agri-agreement scheme on fellow commoners. Group agri-environment schemes on Dartmoor require the majority proportion of common rights to be signed into an agreement. An individual, who holds a significant number of common rights, can impede a group agri-environment agreement for the remaining common rights holders. However, there are instances where an individual has not wanted to join the scheme, and it has been possible for an agri-environment scheme to operate without them. However, this is not a common occurrence, and the concept can cause severe local conflict.

Within a Dartmoor Commons agri-environment scheme, it is not the individual who holds the agreement, but the association as a whole. It may be considered

that this distances the individual participant from the objectives of the agreement and actually, there is no sense of either achievement or indeed, commitment. There is a requirement for further research to grasp an understanding of the commitment made by an individual within a group scheme where the group are forced together and not brought together voluntarily with an opportunity to remain outside of the group.

Some Dartmoor commoners feared for their safety and wished they had not been involved with the agreement negotiation process. Agreements involving so many individuals and a significant amount of money are, as one commoner said 'like putting Granny's will on the table'. The trauma associated with the negotiation process for group application is not documented in the literature. Much of the research linked to group schemes relates a positive image, of the process and the scheme bringing the community together and only recognising the benefits to a landscape scale approach to biodiversity gains (Mills et al., 2011).

Many of the group schemes discussed in the literature are run on a different basis. Many collaborative schemes are run as an agricultural co-operative, with membership on a voluntary basis and a common interest as the driver for membership (Mills et al., 2011). Whereas the commonage schemes in southern Ireland are for groups of commoners, but the agreement to join the agri-environment equivalent is done on an individual basis, not on a group basis (Wilson, 1997). Similar schemes within the UK have still brought people

together under collective action, but the choice to join a scheme is theirs alone and does not impact on any other member of the group (Franks, 2011).

There was a pattern of response to the neutral option within the Likert data. This was evident when analysing the statements relating to the impact of having a recognised successor. It may be feasible that the pattern of response is some underlying aspect of farmer typology. Nadler et al. (2015) identified the issues with Likert scales and suggests a four-point scale may be better than a five-point scale to avoid a bias towards selecting the midpoint. In reflection, it may have been a benefit to the research for the Likert scale to be a four-point scale to avoid central tendency bias.

It may be considered that all of the responses to this survey have been given under difficult circumstances. The participation within a group scheme on common land may be an individual's decision, but it is not without impact on the community of commoners. The overarching jurisdiction of the commoners' association may be stronger than is first thought. Although (Dijk et al., 2015) concluded that there was no correlation between the anticipated action of a farmer and their decision to enter into agri-environment schemes, there was an indication that farmers act on something because of their relationship within a group. It may be suggested here, that it is the group or membership of the local commons association, which does impact on the decision made by the farmer. This may even reflect in the responses to the questionnaire. Despite the replies to the questionnaire being completely unidentifiable as far as the respondent is concerned, the respondents may have known the author and as a result, were

more inclined to give a response that would be less controversial. It is feasible for there to be a degree of Social Desirability Bias, whereby the respondent would not want to reflect an undesirable opinion (Gittelman et al., 2015).

5.5 Farmer factors

The majority of the research before this study looks at factors affecting scheme participation mostly as participating individuals, suggesting it is always a free choice for any respondent. But for Dartmoor farmers, who have a long family history of grazing the commons, there may be no alternative but to enter into agri-environment, as it is the only method of enabling the continuation of grazing the commons.

The results indicated that the workload of the commoner had increased as a result of being in an agri-environment scheme. The agreements stipulate tasks be completed, including clearance of scrub from archaeological features and swailing. This research indicates that these prescriptions have brought the community together and that there is a good working relationship with the Association. The research showed some animosity amongst the participants. It may be suggested that the negotiation process caused most of the hostility within the community, for some members, the situation is improved once the agreement was working.

A significant factor associated with agri-environment scheme participation was the impact on the community. It was well documented within the interview data

that that negotiation process for scheme entry had been terrible. Many of the respondents spoke of the friendships that had been lost because of scheme negotiations, and of close working communities that had fallen apart because of the negotiations for scheme entry.

The Natural England project officer determined the stocking rates for the agreement, and it was up to the association to negotiate these with the members. There was minimal guidance available as to who should have what money for what task, combined with the process of negotiating the grazing allocation was a recipe for conflict, in many circumstances. It may have been very beneficial to provide more guidance to the local commoners' association for the distribution of the funds or to take the negotiation process out of the hands of local people and into the hands of a trained facilitator.

Many of the Dartmoor graziers were very concerned about making room for new grazing members. This research indicated that the majority of graziers had grazed the common for a period more than 31 years, with very few members having grazed the common for less than ten years. With the vast majority of grazing commoners being the descendants of a farming family, it is expected that it will simply be the next generation of the family that takes on the grazing.

The implications of a lack of new graziers would impact in time on the actual number of grazing commoners. The North York Moors highlighted the reduction in the number of moorland flocks from 125 in 1998 to 101 in 2005 (Gov.UK, 2015), this is echoed by the interview data from Dartmoor respondents,

livestock numbers have decreased, and grazing farmers have declined with them.

The data did indicate that a cumulative 31% of respondents were considering grazing the commons in the next ten years. However, there is a difference between considering doing something and doing something. There could also be an increased consideration of the proposal to graze as it is a known fact that on Dartmoor the grazing commoner does benefit from an increased payment over the non-grazing commoner.

Dartmoor commoners who had grazed livestock on the commons before the schemes started in 1998, were far more likely to be still grazing livestock on the Commons today under the current schemes. Dartmoor commoners who did not graze livestock before the start of agri-environmental schemes on the commons were not likely to be doing so today.

The number of grazing commoners has declined since the start of environmental agreements on Dartmoor. Interview respondents recounted names of previous grazing commoners. There is a recognised decrease in the number of grazing commoners across the uplands of England. Concerns are that there will be a continued decline in the number of grazing commoners to 'unviable levels' unless there can be a change in the status of decline Ingram et al. (2013).

The workload has increased as a result of the agreement – while it could be argued that money is given to deliver the goods, the agri-environment money was for income foregone, that is to say, the income lost as a result of the amendments needed to the farming practice caused by the changes. The degree of change to a business that is required for an upland agri-environment agreement on common land may be different or more onerous than an agreement involving an individual farmer in a different farming scenario. Quillerou and Fraser (2010) accepted the degree of change in a farm business is about the productivity of the land. For a Dartmoor hill farm, where much of the land is of poorer quality, and the common land is poor grazing, the degree of change required for the business to participate in an agri-environmental scheme would be significantly greater than a large arable farm, with better grade land, whereby the unproductive margins could be engaged in environmental stewardship.

Within the interviews, many respondents referred to the changes they had made to their businesses, and it was apparent that only the members who grazed livestock on the common had made changes because of agri-environment agreements on the commons. The changes included altering the breed of cattle, changing the calving period and reducing the numbers of livestock on the farm because of the grazing allocation on the common.

The pressure on the grazing commoner has increased due to scheme participation. This was not explored in depth in the interviews, but there were

responses alluding to interference to the existing farming business by the agencies involved with agri-environment schemes.

'Yes it [Dartmoor farming] has already changed, it will change when you get too much outside interference when you are told what you can or cannot or should and should not do. If there is too much interference then what stock you can turn on the commons and when you can do it, when there is too much interference it will not go on as it is. Bearing in mind farmers on the moor have been farming on the moor for generations.' A2 157 – 163

The fluidity required within a farming business does not always fit with the ten years of an agri-environment scheme, for which a grazing calendar is fixed. Barnes et al. (2011) recognised the many contributing factors to the decision-making process of entering agri-environment agreements. The motivations are diverse and often complicated, but there is a strong desire for the continuation of the family farm, and the history of the farm and the traditions associated with it are an important contributing factor to future decisions.

Lobley et al. (2013) suggested farmers engagement with agri-environmental schemes would be much improved if they were trained to understand what it is they need to do and the outcomes that are achieved by their actions. But there was no consideration that the scheme deliverers would also benefit from understanding why the farmers undertake certain activities for particular reasons. Once again, improved dialogue and mutual understanding may be reciprocated by greater involvement and delivery of schemes.

The Dartmoor Commoners considered the current schemes to be inflexible. However, more recent research recognised the fluidity of the environment and

farming and the need to include a degree of flexibility into the schemes. Dartmoor farmers highlighted the need to make changes to their businesses during the period of the schemes but were unable to do so because of the inflexibility. The changes to their business structure were often because of unforeseen circumstances such as calving patterns, weather conditions, family circumstances or animal disease outbreaks. Many Dartmoor farmers felt the existing scheme did not offer any degree of flexibility.

There was a significant relationship between the position of owner or tenant or both and factors such as using the right to graze. Interestingly there was no significant association between the position as owner, tenant or both and payment being an influence to join the scheme.

Having a recognised successor to the business was a significant factor in some of the cross tabulations. It was also an important factor when calculating the Chi-square goodness of fit test. Considering the majority of respondents were neutral in their response to the question of having a successor, it can be assumed that it was of little significance within Dartmoor schemes. The research reiterates the findings that succession is not a determinant factor to scheme participation (Morris and Potter, 1995).

There is a benefit to be had of measuring success on more than just the environment. A measurement of impact on the people and the local economy as well as the archaeological history; success is more than just about habitat.

The benefits of a collaborative approach to agri-environment were recognised in much of the research

Ultimately, we believe, taking account of farmers' preferences is the primary way to enhance the cultural sustainability and long-term buy-in of farmers to AES. Understanding the precise sociocultural mechanisms by which values and attitudes change to this end, however, remains an area of much-needed further study. (Emery and Franks, 2012 p.229).

Whilst Hardin (1968) considered the tragedy of the commons to be the addition by each to the draw upon the common resource, it could never have been envisaged that the actual tragedy of the commons was indeed the complete reverse of this – the withdrawal by each individual from the common resource that then impacts upon the natural social balance.

5.6 In conclusion

Dartmoor Commoners had a great depth of knowledge of the environment in which they farmed; they had an immense degree of pride in their stewardship of the countryside, and saw themselves as the current custodians, taking on from the predecessors. The agri-environment schemes were important to them and their businesses, providing a regular income stream. But the disturbances caused amongst the local commoners in facilitating an agreement had left deep scars in the community. The damage done to the community and the relationships may take many years to resolve. However, this may not be possible. The social unrest caused by group agri-environment schemes was not documented before this research. There is a necessity to better understand conflict resolution, with strong leadership skills essential to success. Agri-environment schemes should not split communities. The farming community in

the uplands has always worked together; notably for the gathering of livestock during the year. However, the agri-environment schemes have stopped many families working together; they no longer help with each other's hay harvest or share farm implements. The damage has been done. Therefore, it is imperative that conflict is not part of any future schemes, that there are strong leadership and a better understanding of the role played by each party to any agreement (Yorke, 2016).

The research indicates the real issue with group agri-environment schemes is the negotiation process; the determination of the grazing allocation on the common and the distribution of the funds cause local conflict. Therefore the national policy could ensure that there is a duty of care placed on all common land rights holders; the unique habitat of the upland commons will be protected from damage. The agreements and the objectives are worked on with a shared vision, a mutual understanding of each party needs, and, understanding that this particular environment is also a farmed landscape. The farmed landscape enables the hill farmer to have a viable farming enterprise. As per the Langholm Moor study (Baynes, 2016), an element of financial viability must be measured as a success alongside the environmental benefits. There also needs to be recognition of the social impact of an agreement, if there is local conflict, then conflict resolution must be made available, as the social cohesion of a community is as important as the environment. The CSF landscape scale approach has been a successful method of incorporating landowners on a landscape scale. Using the same methodology, whereby the individual signs an agreement and is liable for their actions, defers the need for negotiation,

which is the driver of unrest in the uplands. Finally, ensuring there is baseline data and that success and failure are measured from that time on will assist with individuals taking ownership and pride in the agreement.

Appendices

Appendix A Ethics application form

PLYMOUTH UNIVERSITY FACULTY OF SCIENCE AND TECHNOLOGY

Human Ethics Committee

APPLICATION FOR ETHICAL APPROVAL OF RESEARCH
INVOLVING
HUMAN PARTICIPANTS

All applicants should read the guidelines at the end of this application

This is a WORD document. Please complete in WORD and extend space where necessary.

*All applications must be word processed. Handwritten applications **will** be returned.*

Postgraduate and Staff must send one signed hard-copy to xxxxxx and send an unsigned electronic copy of your application to xxxxxx

Undergraduate students should pass on the completed and signed copy of this form to their School Representative on the Science and Technology Human Ethics Committee.

1. TYPE OF PROJECT

1.1 What is the type of project? (Tick 1 only)

STAFF should tick one of the three options below:

Specific project

☒

Tick this box if you are seeking approval for a specific study, or set of studies, with methods that are explained fully in the following sections. This form of approval is appropriate for funded projects with

a clear plan of work and limited duration.

☐

Thematic programme of research

Tick this box if you are seeking approval for a programme of work using a single paradigm.

This form

Of approval is appropriate for pilot work, or routine work that is ethically straightforward. Note, the

maximum period of approval for thematic ethical clearance is 3 years.

☐

Practical / Laboratory Class

Tick this box if you are seeking approval for a teaching activity which involves student involvement in

the role of an experimental participant.

1.2 Tick 1 only

POSTGRADUATE STUDENTS should tick one of the options below:

Taught Masters Project

☐

M.Phil / PhD by research

☐

UNDERGRADUATE STUDENTS should tick one of the two options below:

☒

Student research project

Practical / Laboratory class where you are acting as the experimenter

☐

2. APPLICATION

2.1 TITLE of Research project

Investigating the implications of Environmental Stewardship Schemes on the farming communities of the Dartmoor Commons.

2.2 General summary of the proposed research for which ethical clearance is sought, briefly outlining the aims and objectives and providing details of interventions/procedures involving participants (no jargon)

In order to gain the views of respondents of the implications of Environmental Stewardship Schemes for those persons who are eligible to enrol in a group scheme by way of membership of a Local Commons Association, within the perimeter of Dartmoor National Park.

Identification of potential respondents will be made from the list of commoners held by both Devon County Council and the 'live' register held by Dartmoor Commoners Council.

The two step process will commence with a two page typed questionnaire to be sent by post to potential respondents, including a stamped addressed envelope for return – no details that may identify the respondent are asked for, the forms are completely anonymous.

There will be a limited number of one to one interviews with respondents. An

<p>initial telephone call to those who are eligible to be in an agri-environment scheme on a Dartmoor common will be asked if they are willing to participate in an interview. A semi-structured interview will take place, which will be recorded.</p> <p>The aims of the two stage research collection are as follows:</p> <ul style="list-style-type: none"> • To determine the suitability of the schemes available and consider if they are a good fit for a group application. • Consider how the individuals as members of the group feel the schemes suit them. • Gather views of respondents in an interview that may be used in conjunction with the data collected from the questionnaire.
<p>2.3 Physical site(s) where research will be carried out</p>
<p>The homes of up to 20 Local Commons Association members will be visited.</p>
<p>2.4 External Institutions involved in the research (e.g. other university, hospital, prison etc.)</p>
<p>None.</p>
<p>2.5 Name, telephone number, e-mail address and position of lead person for this project (plus full details of Project Supervisor if applicable)</p>
<p>XXXXXXX</p> <p>XXXXXXXXX</p>

2.8 Start and end date for research for which ethical clearance is sought (NB maximum period is 3 years)

Start date: 15th March 2013

End date: 15th

December 2014

2.9 Name(s) of funding source(s) if any

None

2.10 Has funding already been received?

No ☒

In-part ☐

Yes ☐

2.11 Has this same project received ethical approval from another Ethics Committee?

No ☒

Yes ☐

2.12 If yes, do you want Chairman's action?

No ☐

Yes ☐

If yes, please include other application and approval letter and STOP HERE. If no, please continue

3. PROCEDURE

3.1 Describe procedures that participants will engage in, Please do not use jargon
<p>Respondents will be sent a postal questionnaire and will be asked to complete the two-page questionnaire, comprising close-ended questions and Likert scale questions. A stamped, self-addressed envelope is included for the return.</p> <p>Initial telephone call to make contact with a member of a Local Commons Association. Follow up with a visit and semi structured interview. The interview will be recorded and respondents will be made aware of this fact. The participants will be able to withdraw from the study at any time. There are no personal details required.</p>
3.2 How long will the procedures take? Give details
<p>The two page questionnaire should not take any longer than 20 minutes to complete.</p> <p>There is no correlation between the questionnaire respondents as individuals and interviewees.</p> <p>The semi structured interviews are estimated to take from half an hour to approximately two hours per person, dependent upon the individual and their willingness to speak</p>

4. BREAKDOWN OF PARTICIPANTS

4.1 Summary of participants

<i>Type of participant</i>	<i>Number of participants</i>
<i>Non-vulnerable Adults</i>	<i>Up to 200 participants</i>
<i>Minors (< 16 years)</i>	<i>0</i>
<i>Minors (16-18 years)</i>	<i>0</i>
<i>Vulnerable Participants (other than by virtue of being a minor)</i>	<i>0</i>
<i>Other (please specify)</i>	<i>0</i>
TOTAL	200

4.2 How were the sample sizes determined?

--

By determining the number of Dartmoor Commons in Environmental Stewardship Schemes and taking the average membership as 20 accessible participants and then allowing for a participation rate of 50%
4.3 How will subjects be recruited?
<p>The questionnaires will be posted to those persons listed on the common land report for Dartmoor.</p> <p>The interviewees will be selected as a representational sample of Dartmoor farmers with common rights from the different parts of the moor.</p>
4.4 Will subjects be financially rewarded? If yes, please give details.
No.

5. NON-VULNERABLE ADULTS

5.1 Are some or all of the participants non-vulnerable adults?
<p>No <input type="checkbox"/> Yes <input checked="" type="checkbox"/></p>
5.2 How will participants be recruited? Name any other institution(s) involved
<p>The Dartmoor Commoners Council holds a list of members of Local Commons Associations and this can be used to identify individuals within a Local Commons Association. Local knowledge of which Commons are entered into Environmental Stewardship Schemes will be utilised.</p>
5.3 Inclusion / exclusion criteria
<p>Participants need to either have entered into an Environmental Stewardship Scheme or considering entry.</p> <p>Participants need to be over 18 years of age.</p> <p>Participants must live within or have grazing rights on a Dartmoor Common.</p> <p>Participants may also include individuals who have a vested interest in the Environmental Stewardship Schemes on Dartmoor.</p>
5.4 How will participants give informed consent?
<p>Verbally by agreeing to interact with the interviewer and complete the questionnaire. If the participant does not wish to be part of the study, they will</p>

have an opportunity to say no during the initial call to make contact.
5.5 Consent form(s) attached
<div style="text-align: center;"> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> </div>
<i>If no, why not?</i>
Verbal consent will be requested.
5.6 Information sheet(s) attached
<div style="text-align: center;"> No Yes <input checked="" type="checkbox"/> </div>
<i>If no, why not?</i>
5.7 How will participants be made aware of their right to withdraw at any time?
All respondents will be told during the initial telephone call requesting their assistance with study and at the time of the interview.
5.8 How will confidentiality be maintained, including archiving / destruction of primary data where appropriate, and how will the security of the data be maintained?
There is no requirement for any names to be recorded.

6. MINORS <16 YEARS

6.1 Are some or all of the participants under the age of 16?
No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>
<i>If yes, please consult special guidelines for working with minors. If no, please continue.</i>

6.2 Age range(s) of minors
6.3 How will minors be recruited? (See guidelines). Name any other institution(s) involved
6.4 Inclusion / exclusion criteria
6.5 How will minors give informed consent? Please tick appropriate box and explain (See guidelines)
Opt-in <input type="checkbox"/> Opt-out <input type="checkbox"/>
6.6 Consent form(s) for minor attached
No <input type="checkbox"/> Yes <input type="checkbox"/>
If no, why not?

6.7 Information sheet(s) for minor attached
<div style="display: flex; justify-content: space-around; align-items: center;"> <div>No <input type="checkbox"/></div> <div>Yes <input type="checkbox"/></div> </div>
<i>If no, why not?</i>

6.8 Consent form(s) for parent / legal guardian attached
<p>No <input type="checkbox"/> Yes <input type="checkbox"/></p>
<i>If no, why not?</i>
6.9 Information sheet(s) for parent / legal guardian attached
<p>No <input type="checkbox"/> Yes <input type="checkbox"/></p>
<i>If no, why not?</i>
6.10 How will minors be made aware of their right to withdraw at any time?
6.11 How will confidentiality be maintained, including archiving / destruction of primary data where appropriate, and how will the security of the data be maintained?

7. MINORS 16-18 YEARS OLD

7.1 Are some or all of the participants between the ages of 16 and 18?
<p>No <input checked="" type="checkbox"/> Yes <input type="checkbox"/></p>

If yes, please consult special guidelines for working with minors. If no, please continue.

7.2 How will minors be recruited? (See guidelines). Name any other institution(s) involved

7.3 Inclusion / exclusion criteria

7.4 How will minors give informed consent? (See guidelines)

7.5 Consent form(s) for minor attached

No ☐

Yes ☐

If no, why not?

7.6 Information sheet(s) for minor attached

No ☐

Yes ☐

If no, why not?

7.7 Consent form(s) for parent / legal guardian attached

<div style="display: flex; justify-content: space-around; align-items: center;"> No <input type="checkbox"/> Yes <input type="checkbox"/> </div>
--

<i>If no, why not?</i>
<i>7.8 Information sheet(s) for parent / legal guardian attached</i>
<div style="display: flex; justify-content: space-around; align-items: center;"> No <input type="checkbox"/> Yes <input type="checkbox"/> </div>
<i>If no, why not?</i>
<i>7.9 How will minors be made aware of their right to withdraw at any time?</i>
<i>7.10 How will confidentiality be maintained, including archiving / destruction of primary data where appropriate, and how will the security of the data be maintained?</i>

8. VULNERABLE GROUPS

<i>8.1 Are some or all of the participants vulnerable? (See guidelines)</i>
<div style="display: flex; justify-content: space-around; align-items: center;"> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> </div>
<i>If yes, please consult special guidelines for working with vulnerable groups. If no, please continue.</i>

8.2 Describe vulnerability (apart from possibly being a minor)
8.3 How will vulnerable participants be recruited? Name any other institution(s) involved
8.4 Inclusion / exclusion criteria
8.5 How will participants give informed consent?
8.6 Consent form(s) for vulnerable person attached
<div style="text-align: center;"> No <input type="checkbox"/> Yes <input type="checkbox"/> </div>
If no, why not?
8.7 Information sheet(s) for vulnerable person attached
<div style="text-align: center;"> No <input type="checkbox"/> Yes <input type="checkbox"/> </div>
If no, why not?
8.8 Consent form(s) for parent / legal guardian attached

No <input type="checkbox"/> Yes <input type="checkbox"/>
--

<i>If no, why not?</i>
<i>8.9 Information sheet(s) for parent / legal guardian attached</i>
No <input type="checkbox"/> Yes <input type="checkbox"/>
<i>If no, why not?</i>
<i>8.10 How will participants be made aware of their right to withdraw at any time?</i>
<i>8.11 How will confidentiality be maintained, including archiving / destruction of primary data where appropriate, and how will the security of the data be maintained?</i>

9. EXTERNAL CLEARANCES

Investigators working with children and vulnerable adults legally require clearance from the Criminal Records Bureau (CRB)

<i>9.1 Do ALL experimenters in contact with children and vulnerable adults have <u>current</u> CRB clearance? Please include photocopies.</i>

No <input type="checkbox"/> Yes <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
9.2 If no, explain
9.3 If your research involves external institutions (school, social service, prison, hospital etc) please provide cover letter(s) from institutional heads permitting you to carry out research on their clients, and where applicable, on their site(s). Are these included?
No <input type="checkbox"/> Yes <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
If not, why not?

10. PHYSICAL RISK ASSESSMENT

10.1 Will participants be at risk of physical harm (e.g. from electrodes, other equipment)? (See guidelines)
No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>
10.2 If yes, please describe
10.3 What measures have been taken to minimise risk? Include risk assessment

<i>proformas.</i>
10.4 How will you handle participants who appear to have been harmed?

11. PSYCHOLOGICAL RISK ASSESSMENT

11.1 Will participants be at risk of psychological harm (e.g. viewing explicit or emotionally sensitive material, being stressed, recounting traumatic events)? (See guidelines)
<p style="text-align: center;">No <input checked="" type="checkbox"/> Yes <input type="checkbox"/></p>
11.2 If yes, please describe
11.3 What measures have been taken to minimise risk?
11.4 How will you handle participants who appear to have been harmed?

12. RESEARCH OVER THE INTERNET

12.1 Will research be carried out over the internet?

No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>
12.2 If yes, please explain protocol in detail, explaining how informed consent will be given, right to withdraw maintained, and confidentiality maintained. Give details of how you will guard against abuse by participants or others (see guidelines)

13. CONFLICTS OF INTEREST & THIRD PARTY INTERESTS

13.1 Do any of the experimenters have a conflict of interest? (See guidelines)
No <input type="checkbox"/> Yes <input checked="" type="checkbox"/>
13.2 If yes, please describe
I am Secretary to four Local Commoners Associations on Dartmoor, in order to alleviate any bias, the four Local Commons Associations will have the option of not participating in the study.
13.3 Are there any third parties involved? (See guidelines)
No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>
13.4 If yes, please describe

13.5 Do any of the third parties have a conflict of interest?
<div style="text-align: center;"> No <input type="checkbox"/> Yes <input type="checkbox"/> </div>
13.6 If yes, please describe

14. ADDITIONAL INFORMATION

14.1 [Optional] Give details of any professional bodies whose ethical policies apply to this research
N/A
14.2 [Optional] Please give any additional information that you wish to be considered in this application

15. ETHICAL PROTOCOL & DECLARATION

To the best of our knowledge and belief, this research conforms to the ethical principles laid down by the University of Plymouth and by any professional body specified in section 14 above.

This research conforms to the University's Ethical Principles for Research Involving Human Participants with regard to openness and honesty, protection from harm, right to withdraw, debriefing, confidentiality, and informed consent

Sign below where appropriate:

STAFF / RESEARCH POSTGRADUATES

	Signature	Date
Principal Investigator:	_____	

Other researchers:	_____	

_____	_____	

_____	_____	

Staff and Research Postgraduates should send the completed and signed copy of this form to Paula Simson, Secretary to the Science and Technology Human Research Ethics Committee, 009 Smeaton.

UG Students

	Signature	Date
Student:	_____	

Supervisor / Advisor:

Undergraduate students should pass on the completed and signed copy of this form to their School Representative on the Science and Technology Human Ethics Committee.

Signature

Date

School Representative on Science and
Technology Faculty Human Ethics Committee

CONSENT FORM

PLYMOUTH UNIVERSITY

FACULTY OF SCIENCE AND TECHNOLOGY

Human Ethics Committee Sample Consent Form

CONSENT TO PARTICIPATE IN RESEARCH PROJECT / PRACTICAL STUDY

Name of Principal Investigator

Title of Research

Brief statement of purpose of work

The objectives of this research have been explained to me.

I understand that I am free to withdraw from the research at any stage, and ask for my data to be destroyed if I wish.

I understand that my anonymity is guaranteed, unless I expressly state otherwise.

I understand that the Principal Investigator of this work will have attempted, as far

as possible, to avoid any risks, and that safety and health risks will have been separately assessed by appropriate authorities (e.g. under COSHH regulations)

Under these circumstances, I agree to participate in the research.

Name:

Signature:

Date:

.....

SAMPLE INFORMATION SHEET FOR ADULT / CHILD

PLYMOUTH UNIVERSITY

FACULTY OF SCIENCE AND TECHNOLOGY

RESEARCH INFORMATION SHEET

Name of Principal Investigator

Title of Research

Aim of research

Description of procedure

Description of risks

Benefits of proposed research

Right to withdraw

If you are dissatisfied with the way the research is conducted, please contact the principal investigator in the first instance: telephone number *[PI tel. number here]*. If you feel the problem has not been resolved please contact the secretary to the Faculty of Science and Technology Human Ethics Committee: Mrs Paula Simson 01752 584503.

SAMPLE CONSENT FORM FOR PARENT/LEGAL GUARDIAN

PLYMOUTH UNIVERSITY

FACULTY OF SCIENCE AND TECHNOLOGY

Human Ethics Committee Sample Consent Form

**CONSENT TO PARTICIPATE IN RESEARCH PROJECT / PRACTICAL
STUDY**

Name of Principal Investigator

Title of Research

Brief statement of purpose of work

I am the *parent /legal guardian of

The objectives of this research have been explained to me.

I understand that *she/he is free to withdraw from the research at any stage, and ask for *his/her data to be destroyed if I wish.

I understand that *his/her anonymity is guaranteed, unless I expressly state otherwise.

I understand that the Principal Investigator of this work will have attempted, as far

as possible, to avoid any risks, and that safety and health risks will have been separately assessed by appropriate authorities (e.g. under COSSH regulations)

Under these circumstances, I agree for him/her to participate in the research.

* *delete* *as*

appropriate

Name:

Signature:

Date:

.....

**Faculty of Science and Technology Human Research Ethics Committee List of
School Representatives**

School of Psychology	Prof Judy Edworthy (Chair) Dr Matt Roser
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School of Geography, Earth and Environmental Sciences	Dr Sanzidur Rahman
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School of Biomedical & Biological Sciences	Dr David J. Price
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School of Marine Science & Engineering	Dr Emily Beaumont Dr Liz Hodgkinson
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School of Computing & Mathematics	Mr Martin Beck Dr Mark Dixon
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External Representative	Vacant
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Lay Member	Rev. David Evans
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Committee Secretary: xxxxx

xxxxxxx

tel: xxxxxx

Appendix B information note for interview respondents

Information sheet

Please read the details below before participating with the research as this will enable you to understand the interview technique and the utilization of the results.

Title of the project:

What are the social implications of the Environmental Stewardship Schemes on the farming communities of the Dartmoor Commons?

Details of person undertaking this project:

My name is Ann Willcocks and I farm in partnership with my husband William in the South Quarter of Dartmoor. I am also very involved with several Local Commoners Associations and I am a Quarterman for the South Quarter sitting on the Dartmoor Commoners Council.

I am at present undertaking a Research Masters with both Plymouth University and Duchy College. Hopefully I will attain a ResM in Agriculture and Food.

The purpose of the study:

Environmental Stewardship Schemes play an important role across Dartmoor encompassing the majority of commons, requiring all those with common rights to come together to negotiate a contract for the schemes. There is a great deal of documentation as to the benefits of environmental schemes and how enrolment impacts upon the individual farmers. However there is very little evidence relating to schemes enrolling persons who are not coming together as like minded individuals wanting the same results, but as individuals coming together because they have rights on common land. The study aims to discover the impacts of the environmental schemes on the farming communities that are drawn together to enter into a contract with Natural England.

You, as the participant:

You have been asked to participate in an interview as you hold common rights on Dartmoor and your common is enrolled in an environmental scheme. It does

not matter if you use the rights to graze the common or not. You as an individual may or may not be party to the group agri- environment scheme on the common; there may be a good reason why you are not enrolled and such information will help to balance the overall view points.

You do not have to take part if you do not want to, please feel free to withdraw completely from the interview at any time or if you chose not to answer a particular question please just say so.

All of the responses will remain anonymous, none of the responses will be attributed to you personally or to your business or family.

If you agree to participate, then the interview will last approximately 40 minutes, with a series of open-ended questions put to you. The interview will be recorded to assist with my data capture.

Thank you for taking the time to consider participation.

Ann Willcocks

Appendix C postal questionnaire

XXXXX
Tel: xxxxxx
E: xxxxxx

Ann Willcocks is currently reading for her Research Masters in Agriculture & Food with Duchy College in partnership with Plymouth University. The subject of the research is:

What are the social implications of environmental stewardship schemes on the farming communities of the Dartmoor Commons.

Ann lives and farms in partnership with her husband William on the southern edge of Dartmoor at Harford. Where they graze cattle, sheep and ponies on Harford & Ugborough Commons. The Commons are presently in an UELS and a HLS scheme.

The aim of this research is to evidence the effects of stewardship agreements for the members of Commons Associations on Dartmoor in an unbiased and factual manner.

Whilst many elements associated with the environmental agreements on Dartmoor may be of a sensitive nature, it is hoped you would spare the time to complete the enclosed questionnaire, with your own opinions. It does not matter what you do and do not know, it is merely your opinion that is sought.

The data collected in this research is very important to this study and none of the data will be personally attributed to you.

Should you be willing to participate in an in-depth face-to-face interview in the future, please contact Ann by telephone or e-mail or just write your name and contact details on this form.

Thank you for your time.

Please return the form in the stamped addressed envelope – the sooner the better, better late than never.

1. How long have you and your family **farmed** around this Common?

2. At this moment, do you exercise any of your Common rights?

Yes

No

If yes:

Do you utilise your grazing rights?

Yes

No

Do you know what percentage of your rights you can graze?

For how long have you and your family grazed the Common? Please circle.

Up to 10 years

11 – 20 years

21 – 30 years

31 years plus

If no:

Do you utilise your Common Rights in any other way, as in your SPS grazing allocation?

Yes

No

Would you consider utilizing your grazing rights for grazing the common in the next 5 years ?

Yes

No

Would you consider utilizing your grazing rights for grazing the common in the next 10 years?

Yes

No

Do you remember your families livestock grazing the common?

Yes

No

How many years ago did you or your family graze the common with livestock?

10 – 20 yrs

20 + yrs

3. Are you an owner or tenant of the farm which has Common rights? Circle as appropriate.

Owner

tenant

4. Do you know which Environmental Scheme the Common is now in? Please circle as many as appropriate.

ESA

UELS

HLS

ELS

5. Why do you think commons associations enter EA schemes? Please circle as many as appropriate.

Environment

Financial

Co-erced

Encouraged

Forced

6. Did the HR8 group supplement influence your decision for the Association to join the scheme?

Yes

No

Don't know

7. Did the payment available influence your decision to join?

Yes

No

8. If the agreement could have gone ahead without all members having to join, would you have joined?

Yes

No

9. Does the Environmental Scheme benefit your business?

Yes

No

10. Does membership of the Environmental Scheme affect your future business plans?

Yes

No

11. Does membership of the Environmental Scheme on the Common impact on how you may have utilised the Commons?

Yes

No

12. Do you graze pedigree native breeds on the Common?

Yes

No

13. If yes: Do you collect a Native Breeds at Risk supplement through your Environmental Scheme on the Common?

Yes

No

14. Did you have Native Breeds at Risk 10 years ago?

Yes

No

15. Were they registered with the Breed Society?

Yes

No

16. Do you consider the Native Breeds at Risk supplement a useful supplement?

Yes

No

Are they registered with the Breed Society today?

Yes

No


Number of Common rights you have

Plus 50

Less than 50

17. Farming communities have traditionally had strong ties within the community, with many families linked for generations, having worked on the same Commons. How have the environmental agreements impacted on the traditionally strong ties?

On a scale of 1 to 5, with 1 being strongly disagree and 5 being strongly agree, please rate the following by ticking the appropriate box

1  5

strongly disagree **strongly agree**

The working relationship between graziers is stronger because of the Stewardship Agreement

☐ ☐ ☐ ☐ ☐

The working relationship between graziers is harder because of the Stewardship Agreement

☐ ☐ ☐ ☐

☐

The working relationship between commoners is weaker because of Stewardship Agreement

☐ ☐ ☐ ☐ ☐

The Stewardship Agreement meetings held within the association have brought the community together

☐ ☐ ☐ ☐ ☐

On a scale of 1 to 5, with 1 being strongly disagree and 5 being strongly agree, please rate the following by ticking the appropriate box

1 Strongly disagree

5

Strongly agree

There is more pressure on the graziers because of Stewardship Agreement

☐ ☐ ☐ ☐ ☐

The work load has increased because of Stewardship Agreement

☐ ☐ ☐ ☐ ☐

There is a good working relationship between all members of the Association

☐ ☐ ☐ ☐ ☐

The age of the farmer influences participation in a Stewardship Agreement

☐ ☐ ☐ ☐ ☐

The size of the home farm determines the need to enter a Stewardship Agreement

☐ ☐ ☐ ☐ ☐

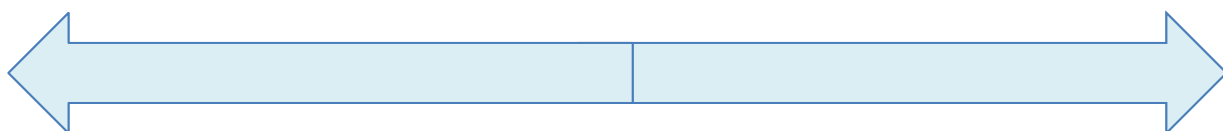
If the home farm is tenanted there is a need to enter into a Stewardship Agreement on the common

☐ ☐ ☐ ☐ ☐

Having recognised successors to the farming business determines a need to enter into a Stewardship Agreement

☐ ☐ ☐ ☐ ☐

18. Applications for Commons Associations to enroll in environmental schemes often involve many individual interested parties. When considering the application process please consider how difficult or easy the following were – please tick the appropriate box.



1

Very difficult

5 Very easy

Getting your Association into a scheme?

☐ ☐ ☐ ☐ ☐

For Association members to work together?

☐ ☐ ☐ ☐ ☐

Determining the financial payment distribution?

☐ ☐ ☐ ☐ ☐

Determining the grazing allocation?

☐ ☐ ☐ ☐ ☐

Finalising the Internal Deed

☐ ☐ ☐ ☐ ☐

Negotiations with the Project Officer

☐ ☐ ☐ ☐ ☐

Negotiations with the Facilitator

☐ ☐ ☐ ☐ ☐

Which of the above do you consider was the most difficult process, if any?

Appendix D Interview guidance note

PART ONE – BACKGROUND INFORMATION

1. Please can you provide some background information to your farming history and farming place here?:

- How long have you farmed here?
- Is the farm that generates the rights owned or rented?
- Do you utilize your common rights at all?
Has that changed over the years?
Are the common rights themselves important to your business? If so how?
If you are a tenant, are you expected to graze the common as part of your tenancy agreement?
- If applicable, is the allocation of grazing rights under an environmental scheme on the common important to your business?
- Do you use your rights to graze livestock on the common?
- If no, why do you not graze livestock on the common?
- Do the livestock graze on the common for the whole year?
- Are the numbers you can graze restricted in any way?
- Why graze the commons, surely the risk of losing livestock is great?
- Do you know what schemes you are enrolled in, as part of the Local Commoners Association on the common?

PART TWO - WHAT IS IT TO BE A DARTMOOR HILL FARMER:

- Do you think there is such a title as a Dartmoor Hill Farmer?
- What words would you use to describe a Dartmoor Hill Farmer?
Would you consider changing how you farm in the future – what would determine such change?

- How do you think your way of farming is viewed by the general public – what about your neighbours, what do you think they think?
- What is it to be part of a rural community?
- What is your rural community like
- What changes the spirit of a community?
- What about your farming neighbours, how do you get on with them?
- Do farming communities work together?

AND NOW I WOULD LIKE TO MOVE THE DISCUSSION
TOWARDS THE ENVIRONMENTAL SIDE

PART THREE- ENVIRONMENTAL SCHEMES PAST AND PRESENT:

- How do you consider the environmental schemes have been received on Dartmoor? What do you think others think?
- What about in terms of environmental benefit, in your opinion?
- Have the current schemes that you are party to had an impact upon your business?
- What are your thoughts on the success of the HLS scheme?
- How do you consider enrolment with the scheme has, if at all impacted upon your community?
- How are environmental schemes as a whole important to you personally, considering the importance of protecting the environment?
- What or who were the main influences in your decision to join or not join the Environmental Agreement?
- Has enrolment of the schemes involved changes to YOUR business to incorporate the HLS scheme?

HLS In many cases this was the follow on scheme from the ESA, a newer, higher tier scheme. Adopted by many commons Associations on Dartmoor.

- How was this scheme sold to your Association?

- How do you consider the HLS scheme has impacted upon Dartmoor and its people?

UELS The Uplands Entry Level Stewardship Scheme was introduced in 2010, a specific scheme for the uplands delivering some of the budget that historically would have been delivered to the recipients of Hill Compensatory Allowance. The Dartmoor Commoners Council created a model deed for LCA's to adopt

- What were your initial thoughts on the introduction of the UELS scheme?
- Did the Local Commoners' Association enrol in this scheme on your common?
- How was local knowledge utilised in creating the measurable outcomes?

SCHEME APPLICATION

- How long did it take the your Association to negotiate a deal for entry into the scheme?
- Did the LCA have any real issues during the negotiations that caused conflict?
- What about Graziers/non graziers how do they fit with the scheme – how do you see their role? What do you think others think about their role? On a scale of say zero and plus or minus on the line, is it beneficial that they (graziers/non graziers) are enrolled in the scheme?
- Having now experience environmental schemes for some time – what do you think is right or wrong with them?

Is there anything else you would like to add to this part of the discussion regarding the environmental impact of environmental schemes on the Dartmoor Commons and the communities thereof?

PART FOUR -KEY IMPACTS

- How difficult would it be easy for anyone to start grazing the common if they have rights to do so?

- What are the pros and cons of being party to a group environmental agreement?
- Do you consider the group scheme to be a success on commons?
- Have there been any issues with the ea scheme on your common that you have been made aware of?

Are there any further points you would wish to make?

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